This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Google

W1
A
HO
1
1892
c.3

ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

FOR THE YEAR 1891.

Embracing full Proceedings of the Semi-Annual Meeting held at
Kilbourn City June 23–24, 1891, and the Annual Meeting held
at Madison, Wis., February 2—5, 1892.

VOLUME XXII.

B. S. HOXIE, Secretary,
EVANSVILLE, WIS.

MADISON, WISCONSIN:
DEMOCRAT PRINTING COMPANY, STATE PRINTERS.
1892.

TABLE OF CONTENTS.

Page.

TRANSACTIONS OF SUMMER MEETING AT KILBOURN CITY, JUNE 23-24 1
- Address of Welcome, by J. E. Jones, Kilbourn City 2
- Fruit Regions of Wisconsin, by A. L. Hatch, Ithaca 3
- Every School a Horticultural Society, by Prof. Chester W. Smith, Kilbourn City.. 7
- A Horticultural Trip With a Report of Trial Stations, by Prof. E. S. Goff, Madison. 11
- Home Adornment, by Mrs. Florence Brinkman, Alma Center 21
- The Garden of the Villages and Fruit Grower, by D. C. Converse, Ft. Atkinson... 25
- Influence Upon Morals From the Study of Nature, by Miss Mary Conway, Kilbourn City 27
- The Drouth, by A. W. Winslow, Appleton 29
- Ferns of the Dells, by Chas. N. Chanter, Kilbourn City 30
- New Varieties of Strawberries, by Geo. J. Kellogg, Janesville 36
- The Benefits of Planting Small Fruits in the Fall, by A. D. Barnes, Waupaca..... 40
- Reports from Local Societies 47

TRANSACTIONS OF TWENTY-SECOND ANNUAL MEETING 50
- Shall We Continue to Plant Seeds to Obtain New Varieties of Apples, by W. A. Springer, Fremont 53
- Apples and Apple Orchards in Sauk County, by Charles Hirschinger, Baraboo... 57
- Best Method of Propagating Apple Trees for the Northwest, by A. Clark Tuttle, Baraboo 67
- Address of President Thayer 70
- Report of Secretary 75
- Report of Treasurer 79
- Seedling Apples, by M. B. Johnston, Appleton 82
- Hardiness Versus Quality, by J. Wakefield, Fremont 83
- The Growth and Progress of the Vineyard in the United States, by Wm. Fox, Baraboo 87
- Mr. Philips' Tree Protector, by E. S. Goff, Madison 91
- Spraying, by A. H. Nixon, Dayton, Ohio 94
- Insecticides Used in Spraying, by Clarence M. Weed 97
- Onion Culture by the Good Old Way, by A. M. Ten Eyck, Brodhead 104
- Onion Culture by the New and Better Way, by Carl H. Potter, Madison....... ... 109
- What Business to Follow in Connection With Fruit Growing, by C. A. Hatch, Ithaca 117
- Small Fruit in Waupaca County, by F. Rich, Waupaca 130
- The New Fruit Culture, by A. L. Hatch, Ithaca 133
- Winter Protection of Small Fruits, by Warren Gray, Darlington... 137
- The Township Library, by F. A. Hutchins, Madison. 143
- Report of Geo. J. Kellogg, Janesville, Delegate to Northern Illinois Horticultural Society 146
- Report of A. J. Philips, West Salem, Delegate to Iowa Horticultural Society.... 148
- Character Building in Home and School, by Prof. J. Livingstone, Sparta.... 150

ANNUAL MEETING—Continued. *Page.*

The Kitchen Garden, by Mrs. Montgomery Smith, Mineral Point 156
In The Garden, by Mrs. Helen H. Charlton, Brodhead 160
Village Improvement Societies and Arbor Day, by Prof. E. S. Goff 165
Horticultural Education, by A. H. Felch, Amherst 173
Hardy Ornamental Trees, Shrubs and Vines, by J. L. Fisk, Omro 176
Reports From Local Societies 182, 194
Reports of Ad Interim Committees 195, 201

SECRETARY'S PORTFOLIO.

Report of Trial Station Work, by E. S. Goff, Madison 202
Mr. Peffer's Seedling Apples, by E. S. Goff, Madison 206
Fruit Districts Geologically and Climatically Considered, by Prof. E. S. Goff 210
Chrysanthemum Culture, by Arthur Elliot, Baraboo 215
The Culture of Flowers Among the Children, by Miss Mamie Myers, Baraboo 217
Ampelopsis Veitchii, by C. E. Tainter, Madison 220
A Horticulturist's Idea of a Farmer's Home, by C. Church, Walworth 225
Raising Blackberries, by S. O. Wittard, New London 226
Are House Plants Injurious to Human Life, by W. McFarlane, Evansville 230
Report of Observations for 1891, by Geo. J. Kellogg, Janesville 232
The Flower Garden, by J. A Pettigrew, Superintendent Lincoln Park, Chicago, Illinois 234
Varieties of Cranberries, by A. C. Bennett, Appleton 237
Cranberry Canning, by A. C. Bennett, Appleton 243
Spraying, from Wisconsin Farmer 247
Some Facts Relating to Spraying and Poisons Used (Selected) 252
Blackberries; Paper by Prof. E. S. Goff, Madison 255
Strawberries and Raspberries, as Grown at Cottage Grove Fruit Farm, by E. J. Scofield, Hanover 256
The Present Status of Native Plum Culture, by Prof. E. S. Goff, Madison 265

LETTER OF TRANSMITTAL.

To Geo. W. Peck,

Governor of the State of Wisconsin:

Sir—I have the honor of presenting to you the twenty-second annual volume of the transactions of the Wisconsin State Horticultural Society, containing a full account of the receipts and expenditures of the society for the year 1891, together with the papers read and the discussions thereon at the annual and semi-annual meetings.

I also have the pleasure of reporting to you the increasing interest in horticultural pursuits as a business in our state.

Respectfully yours,

B. S. HOXIE,

Secretary Wisconsin State Horticultural Society.

Evansville, Wis., March 28, 1892.

WISCONSIN STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1892.

M. A. Thayer, President,	Sparta.
L. G. Kellogg, Vice-President,	Ripon.
B. S. Hoxie, Secretary,	Evansville.
Vie H. Campbell, Treasurer,	Evansville.
Carl H. Potter, Cor. Secretary,	Madison.

EXECUTIVE COMMITTEE.

Ex-officio.

THE ABOVE OFFICERS.

By Election.

Henry Tarrant, Janesville.
Geo. H. Robbins, Platteville.
Daniel Huntley, Appleton.
Daniel Williams, Summit.
Franklin Johnson, Baraboo.
Prof. E. S. Goff, Madison.
W. D. Barnes, Shiocton.
A. M. Ten Eyck, Brodhead.
William Ingalls, Fond du Lac.
J. L. Herbst, Sparta.
W. S. Braddock, Mather.

COMMITTEES FOR 1892.

By Appointment.

ON LOCAL EXPERIMENTAL STATIONS.

Prof. E. S. Goff, **Prof. W. A. Henry**,	University.	Madison. Madison.
Geo. J. Kellogg, **Wm. Toole**, **C. H. Hamilton.**	Horticultural Society.	Janesville. Baraboo. Ripon.

NEW FRUITS.

A. Clark Tuttle,	Baraboo.
A. J. Phillips,	West Salem.
Wm. Springer,	Fremont.

NOMENCLATURE.

J. C. Plumb,	Milton.
Chas. Hirschinger,	Baraboo.
Wm. Springer,	Fremont.

LEGISLATION.

B. S. Hoxie,	Evansville.
C. E. Tobey,	Sparta.
W. S. Braddock,	Mather.

FINANCE.

Matt. Anderson,	Pine Bluff.
J. M. Edwards,	Ft. Atkinson.
Geo. H. Robbins,	Platteville.

ARBOR DAY.

Prof. E. S. Goff,	Madison.
B. S. Hoxie,	Evansville.
Vie H. Campbell,	Evansville.

COMMITTEE ON OBSERVATION.

Geo. P. Peffer,	Pewaukee.
Mrs. Daniel Huntley,	Appleton.
Wm. Springer,	Fremont.
M. Gibson,	Berlin
Daniel Williams,	Summit.
Wm. Toole,	Baraboo.
D. C. Converse,	Ft. Atkinson.
S. U. Utter,	South Wayne.
John Rhodes,	Kansasville.
Mrs. Mary Hartley,	La Crosse.
Henry Tarrant,	Janesville.
J. M. Smith,	Green Bay.
C. A. Hatch,	Ithaca.
Geo. H. Robbins,	Platteville.
. Lowell,	Eau Claire.
J. H. Treat,	Meadow Valley.

To the Committee on Observation:

It is earnestly hoped and expected that each member of this committee will be prepared to report in writing to the secretary at the close of the season of 1892, the progress of horticulture during the season. I wish these reports to be full and complete, embracing all such matters pertaining to horticulture in our state, as you would like to know about localities that you cannot visit personally, by so doing all are put in possession of the facts we desire information on.

Please note down facts and phenomenon relating to aspects of weather, heat, cold, storms, insect depredations, etc. In short, any information which may be of interest to the public and the members of this society.

B. S. HOXI
Secretary.

MEMBERS OF THE SOCIETY.

LIFE MEMBERS.

Geo. J. Kellogg,	Janesville.
F. W. Loudon,	Janesville.
H. S. Woodruff,	Janesville.
Mrs. Ida Tilson,	West Salem.

HONORARY LIFE MEMBERS.

J. M. Smith, ex-President,	Green Bay.
Dr. Joseph Hobbins, F. C. S., Corresponding Member Royal Hort. Soc., ex-Pres.,	Madison.
O. S. Wiley, ex-Secretary,	Madison
F. W. Case, ex-Secretary,	Chicago, Ill.
Prof. Wm. Trelease,	St. Louis, Mo.
J. S. Stickney, ex-Pres.,	Wauwatosa, Wis.
A. G. Tuttle, ex-Pres.,	Baraboo.
B. F. Adams;	Madison.
F. K. Phoenix,	Delavan.
Peter M. Gideon,	Excelsior, Minn.
E. Wilcox,	La Crosse, Wis.
Geo. P. Peffer,	Pewaukee.
Wm. Springer,	Fremont,
J. C. Plumb,	Milton.
C. A. Chanter,	Kilbourn City.
J. S. Harris,	La Crescent, Minn.

ANNUAL HONORARY MEMBERS.

W. B. Lloyd,	Chicago, Ill.
Jonathan Periam,	Chicago. Ill.
Orange Judd,	Chicago, Ill.
Prof. W. A. Henry,	Madison, Wis
Prof. A. J. Cook,	Lansing, Mich.
C. G. Patten,	Charles City, Iowa.
Chas. W. Garfield,	Grand Rapids, Mich.

Hon. John B. Peaslee,	Cincinnati, Ohio.
Edgar Sanders,	Chicago, Ill.
H. F. Thurston,	Chicago, Ill.
T. T. Lyon,	South Haven, Mich.
Geo. E. Morrow,	Champaign, Ill.
Chester W. Smith,	Kilbourn City.
J. E. Jones,	Kilbourn City.
Miss Mary Conway,	Kilbourn City.
A. H. Nixon,	Dayton, Ohio.
F. A. Hutchins,	Madison, Wis.
J. E. Livingstone,	Sparta.
Mrs. J. Montgomery Smith,	Mineral Point.
Mrs. Helen M. Charleton,	Brodhead.
E. H. S. Dartt,	Owatona, Minn.
B. F. Ferris,	Hampton, Iowa.

LIST OF ANNUAL MEMBERS, 1891.

(Annual membership fee in this society is $1.00 per annum and expires February 1, with current year. This list contains all names of members received up to time of printing this volume.)

Anderson, Matt, Pine Bluff.
Abbott, Wm., Warren's Mills.
Abbott, Mrs. Wm., Warren's Mills.

Buckingham, E., Northwestern National Bank, Chicago.
Barnes, W. D. Shiocton.
Barnes, Mrs. W. D., Shiocton.
Boynton, W. D., Shiocton.
Boynton, Mrs. W. D., Shiocton.
Braddock, W. S., Mather.

Canning, James, Grand Rapids.
Cole, Wm., Huntington, Putnam Co., Fla.
Campbell, Henry, Evansville.
Campbell, Vie H., Evansville.
Coe & Converse, Ft. Atkinson.
Chappel, F. H., Oregon.
Cook, Alex., Waukesha.
Currie, James, Milwaukee.
Currie, Mrs. James, Milwaukee.
Crosby, Phineas, Clinton.

Dipple, Conrad, Watertown.

Edwards & Son, Ft. Atkinson.
Edwards, F. C., Ft. Atkinson.

Freeborn, S. I., Ithaca.
Freeborn, Mrs. S. I., Ithaca.
Fisk, J. L., Omro.
Felch, J. H., Amherst.
Fox, Wm. Baraboo.
Fox, Mrs. Wm., Baraboo.

Goff, E. S., Madison.
Goff, Mrs. E. S., Madison.
Gifford, A. O., Milton.
Gray, Warren, Darlington.
Gale, Isaac & Son, Wawkesha.

Houston, J. H., Cambria.
Hatch, C. A., Ithaca.
Hatch, Mrs. C. A., Ithaca.
Hill, Geo. C., Rasendale.
Hatch, A. L., Ithaca.
Hatch, Mrs. A. L., Ithaca.
Hirschinger, Chas., Baraboo.
Harden, Fred. A., Weyauwego.
Herbst, J. L., Sparta.
Holmes, W. H., Davenport, Iowa.
Holmes, Mrs. W. H., Davenport, Ia.
Hoxie, B. S., Evansville.
Hoxie, Mrs. B. S., Evansville.
Howie, John, Waunakee.
Hanchette & Son, Sparta.

Ingalls, W. O., Fond du Lac.
Ingalls, S. M., Fond du Lac.

Johnson, Franklin, Baraboo.
Johnson, Mrs. Franklin, Baraboo.
Johnston, M. B., Appleton.
Johnston, Mrs. M. B., Appleton.

Jeffrey, Geo., 2726 Lisbon Ave., Milwaukee.
Jewett, Z. K., Sparta.
Jewett, Mrs. Z. K., Sparta.

Kellogg, L. G., Ripon.

Leitch, John, Mazomanie.

McGowan, J. S., Janesville.
Mills, Simeon, Madison.
Mason, R. D., & Son, Ripon.
Morrison, W. H., Madison.

Odell, R. H., Milwaukee.

Phillips, A. J., West Salem.
Palmer, N. N., Brodhead.
Palmer, Mrs. N. N., Brodhead.
Prindle, A. W., Merrillan.
Potter, C. H., Madison.

Reynolds, Werden, Green Bay.
Rich, T., Waupaca.
Robbins, Geo. H., Platteville.
Robbins, Mrs. Geo. H., Platteville.

Spinner, S. B., Trempleau.
Springer, Wm. A., Fremont.
Smith, J. M., Green Bay.
Seymour, A. N., Mazomanie.
Spry, John, Ft. Atkinson.
Scofield, E. J., Hanover.
Spring, J. O., Reedsburg.
Smith, Mrs. J. Montgomery, Mineral Point.
Smith, A., Weyauwega.
Spaulding, D. J., Black River Falls.

Tarrant, Henry Janesville.
Tarrant, Mrs. Henry, Janesville.
Tuttle, A. C., Baraboo.
Tuttle, Mrs. A. C., Baraboo.
Tobey, C. E., Sparta.
Tobey, Mrs. C. E., Sparta.
Thayer, M. A., Sparta.
Thayer, Mrs. M. A., Sparta.
Ten Eyck, A. M., Brodhead.
Tainter, E. C., 203 Monona Ave., Madison.
Toole, Wm., Baraboo.
Toole, Mrs. Wm., Baraboo.

Usher, S. W., South Wayne.

Wrightman, E., Weyauwega.
Williams, Mrs. Daniel, Summit.
Wakefield, J., Fremont.
Wells, F. J., Milton.
Walstrum, J. F., Otsego, Mich.

Yahr, Solon, West Bend.

OFFICERS OF THE WISCONSIN STATE CRANBERRY GROWERS' ASSOCIATION FOR 1892.

W. S. Braddock, President,	Mather.
S. A. Spafford, Vice-President,	Grand Rapids.
J. H. Treat, Secretary and Treasurer,	Meadow Valley.

EXECUTIVE COMMITTEE.

H. O. Kruschke,	Duester.
C. J. Kruger,	Dexterville.

OFFICERS OF THE WISCONSIN BEE KEEPERS' ASSOCIATION FOR 1892.

C. A. Hatch, President,	Ithaca.
B. Standish, Vice-Presideut,	Evansville.
L. Lathrop, Recording Secretary,	Browntown.
Dr. J. W. Vance, Corresponding Secretary,	Madison.
M. L. Plumb, Treasurer,	Milton.
Executive Committee,	President, Secretary and Treasurer.

LIST OF NURSERYMEN AND FRUIT GROWERS IN WISCONSIN.

Boynton, W. D., Shiocton, nursery grown evergreens and seedlings by the million.
Bendixen, W. J., Waupaca.
Barnes, A. D., Waupaca, Arctic Nursery and Fruit Farm.

Chappel, F. H., Oregon, grower and dealer in nursery stock.
Coe & Converse, Ft. Atkinson, nursery and small fruit.
Currie Bros., Milwaukee, florists and seedsmen.

Dipple, Conrad, Watertown, Wis., fruit grower.

Freeborn, S. I., Ithaca, Pioneer Nurseries.
Fox, William, Baraboo, Prop. Mt. Airy Vineyard.

Gale, Isaac & Son, Waukesha, nurserymen and fruit growers.
Gray, Warren, Darlington, Cottage Hill Fruit Farm, small fruit nursery.

Hanchett & Son, Sparta, Badger State Fruit Farm and headquarters for Van Deman strawberry.
Howie, John Waunakee, farmer and fruit grower.
Hatch, C. A., Ithaca, bee-keeper and fruit grower.
Hatch, A. L., Ithaca, Hill Crest Fruit Farm.
Hirschinger, Chas., Baraboo, orchardist and nursery stock of all kinds.
Hamilton, C. H., Ripon, fruit farm, small fruits a specialty.

Jewett, Z. K., Sparta, Sparta Nurseries.
Jeffrey, George, 2726 Lisborn Ave., Milwaukee, apples and pears a specialty

Kellogg, Geo. J. & Sons, Janesville, Belle Cottage Fruit Farm.

Leitch, John, Mazomanie, small fruit grower.
Loudon, F. W., Janesville, small fruits. Originator Jessie strawberry.

Mason, R. D. & Son, Ripon, fruit growers.

Plumb & Son, J. C., Milton, nursery and dealer in all kinds of nursery stock.
Peffer, Geo. P., Pewaukee, nursery and small fruits.

Robbins, Geo. H., Platteville, grower and propagator of small fruits.

Seymour, Asa N., Mazomanie, small fruits. Dealer in plants and vegetables.
Springer, Wm., the Fremont nurseries.
Spaulding, D. J., Black River Falls, grower in small fruits.

Tuttle, A. C., Baraboo, nursery and small fruit.
Thayer, M. A., Sparta, fruit farm; small fruits in variety.

Walstrum, J. F., Otsego, Mich., River Side Fruit Farm.

Yahr, Solon, West Bend, small fruit grower.

FRUIT LIST.

APPLES.*

Five hardiest varieties for Wisconsin — Oldenburg, McMahan,† Hibernal, Wealthy, Tetofski.

Ten best adapted varieties — Hardiness, productiveness and quality taken into consideration — Oldenburg, Wealthy, Fameuse, Tallman Sweet, Wolf River, McMahan, Yellow Transparent, Hibernal, Longfield, Newell.

Additional list for special locations — Alexander, Utter, Westfield, Willow Twig, Golden Russet, Tetofski, Red Astrachan, St. Lawrence, Fall Orange, Fall Spitzenburg, Walbridge, Pewaukee, Haas, Plumb's Cider, Roman Stem, Transparent, Repka Malenka.

For trial — Avista, Windsor.

CRAB APPLES. (SIBERIAN.)

Four hardiest — Transcendent, Hyslop, Martha, Sweet Russet.

For general cultivation — Whitney, Gibb, Hyslop, Sweet Russet, Transcendent, Martha, Novelty, Spitzenburg.

PEARS.

New sorts for trial — Bessemianka, Gakovska.

Most likely to succeed — Flemish Beauty.

For trial near Lake Michigan — Ananas d'Été, Early Bergamont, Bartlett, Onondaga [Swan's Orange], Seckle, Winter, Nélis, Clapp's Favorite, Beurré d'Anjon, Doyuné d'Été.

---

* NOTE.— What kinds to plant, depends so largely upon local conditions of soil, elevation, etc., that, at best, this list can only be a general guide.

1st. The best sites for apples and grapes are elevated, limestone, clay soils, that are not too rich, and are free from untimely frosts.

2nd. Varieties that succeed best on certain soils and subsoils are the best to plant on similar sites.

3rd. For the poorer sites plant only the hardiest.

4th. To prevent contagion of fungus diseases plant but few kinds.

5th. Give protection to tree trunks, proper cultivation; and to secure best results spray to prevent injury from insects and fungus diseases.

† Pronounced Mack-man.

PLUMS.

For general cultivation — De Soto, Cheney.

Near Lake Michigan — Lombard, Imperial Gage, Yellow Egg [Magnum Bonum], Duane's Purple.

For trial — Rollingstone, Wolf, Ocheda, Rockford.

CHERRIES.

For general cultivation — English Morello, Early and Late Richmond [Kentish].

For trial — Wragg, Ostheim, Bessarabian.

STRAWBERRIES.

For general cultivation and shipping — *Warfield, Sandoval, *Cresent, Wilson.

For near markets and home gardens — *Bubach, *Warfield, *Cresent, Jessie, Wilson, *Haverland, *Manchester, Sandoval, *Bubach No. 5.

Best varieties to furnish pollen for imperfect flowering kinds — Wilson, Capt. Jack, Michel's Early, Jessie, Sandoval.

Best imperfect flowering kinds — Bubach, Crescent, Warfield, Haverland.

For trial — Earle, Wood [Beder Wood], Hoard, Van Deman, Park Beauty, Enhance, *Stayman's No. 1, *Princess, *Great Pacific.

GRAPES.

For general cultivation — Moore's Early, Worden, Concord, Delaware Brighton, Telegraph.

Frosty and unfavorable localities — Janesville, Moore's Early, Worden, Victor, Ulster, Champion.

For amateurs — Niagara, Lady, Wyoming, Lindley, Vergevenes, Massasoit, Wilder, Conqueror, Black-Hawk, Naomi, Green Mountain.

BLACK RASPBERRIES.

For general cultivation — Gregg, Ohio, Souhegan, Nemaha; recommend with winter protection. Ohio may do without protection.

For trial -- John's Sweet, Palmer, Hilborn. Older.

RED RASPBERRIES.

For general cultivation — Cuthbert, Turner, Shaffer, Marlboro, with winter protection. Turner may do without protection.

---

* Has imperfect flowers, and must be planted near those having perfect flowers.

BLACKBERRIES.

For general cultivation — Snyder, Stone's Hardy, Ancient Briton. [Winter protection is recommended for all.]

For trial — Taylor.

DEWBERRIES.

Lucretia, Bartel.

CURRANTS.

Red Dutch, White Dutch, White Grape, Victoria, Fay, Albert, Holland, Lee's (black).

GOOSEBERRIES.

For general cultivation — Houghton, Downing, American Cluster.

For trial — Smith's, Industry.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

For general planting—in order named: White Pine, Norway Spruce, White Spruce, Arbor Vitæ, Balsam Fir, Austrian Pine, Scotch Pine.

For ornamental planting—in order named: Hemlock, Red Cedar, Siberian, Arbor Vitæ, Dwarf Pine, Red or Norway Pine.

DECIDUOUS TREES.

For Timber—White Ash, Black Walnut, Hickory, Black Cherry, Butternut, White Oak, European Larch, American Larch.

Street Shade Trees—White Elm, Hard Maple, Basswood or Linden, Ashleaf Maple (*Acer Negundo*), Norway Maple, Hackberry.

For Lawn Planting—Weeping Cut leaved Birch, American Mountain, Ash, Green Ash, Horse Chestnut, European Mountain Ash, Wisconsin Weeping Willow, Oak-leaved Mountain Ash, White Birch, Weeping Golden-barked Ash, Weeping Mountain Ash, Weeping Poplar.

ORNAMENTAL SHRUBS.

Hardy Shrubs—Snowball, Syringa, Upright Honeysuckle, European Strawberry Tree, Fringe or Smoke Tree, Purple-leaved Barbary; Lilac, White, Purple and Persian; Black Alder; Nine Bark.

Half Hardy Shrubs—Deutzia (*Gracilis*), Weigelia (*Rosea*), Flowering Almond, red and white; Spirea, Prunifolia and others, Flowering Quince, Cut leaved Sumac, Hydrangea Grandiflora.

Climbers—American Ivy (*Ampelopsis quinquefolia*), Scarlet Honeysuckle (*Lonicera Sempervirens*), Fragrant Honeysuckle (*Lonicera Jackmanni*), Virgin's Bower (*Clematis Virginiana*), Climbing Bitter Sweet and Ampelopsis Veitchii.

ROSES (with protection.)

Climbers — Queen of the Prairie, Gem of the Prairie, Baltimore Belle, Mary Washington.

Moss Roses — Princess Adelaide, Luxembourg, Henry Martin, Crested Moss.

Hybrid and June Roses — Persian, Yellow Harrison, Madam Plantier, General Jacqueminot, La France, General Washington, Paul Neron, Magna Charta.

CONSTITUTION AND BY-LAWS.

As amended February, 1885.

CONSTITUTION.

ARTICLE I. This society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II. Its object shall be the advancement of the art and science of horticuture throughout the state.

ARTICLE III. Its members shall consist of *annual* members, paying an annual fee of one dollar, which shall entitle the wife of such member to the privileges of full membership; of secretaries of local horticultural societies reporting to the state society, who shall be considered members *ex-officio;* of *life* members, paying a fee of ten dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may, by vote, be invited to participate in the proceedings of the society.

ARTICLE IV. Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent, and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society shall be deemed honorary members and *ex-officio* vice-presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

ARTICLE V. The society shall hold its annual meeting for the election of officers, commencing on the first Monday in February. It may also hold a meeting in December of each year, at such place and time as may be decided upon by the society, or the executive committee for the exhibition of fruit and for discussions, and such other meeting for discussions and exhibitions as the executive committee may direct, at such time and place as the executive board shall designate.

ARTICLE VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting, by a two thirds vote of the members present.

BY-LAWS.

I. The president shall preside at meetings, and with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society, at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state, and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state, of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the president, countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same, on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds, for the faithful performance of his duties, subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committtee.

VI. It shall be the duty of the finance committee to settle with the treasurer, and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committies of this society shall be as follows: 1st, Committee on Finance, consisting of three members; 2d, committee on Nomenclature and New Fruits, consisting of three members; 3d, Committee on Observation, as now provided. Said committee to be appointed annually by the executive committee of the society.

ACT OF RE-ORGANIZATION,

AND LAWS RELATING TO THE

STATE HORTICULTURAL SOCIETY.

CHAPTER 151, LAWS OF 1879, AS AMENDED BY CHAPTER 14, LAWS OF 1887.

SECTION 1. The executive committee of the Wisconsin State Horticultural Society, shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state, said members from the congressional districts to be chosen annually by the county and local horticultural societies in the respective districts.

SECTION 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, 1880, and until their successors are appointed.

SECTION 3. It shall be the duty of said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meetings for discussion; by the collection and dissemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interest of the state.

SECTION 4. The annual meeting of the sceiety for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture, shall be held at such time and place as may be determined at the last preceding annual meeting. In case of the failure of such meeting to so determine, the executive board may call such meeting by giving at least thirty days' notice to each member of the society.

SECTION 5. All vacancies in the offices of said society may be filled by the executive committe; and should there be a failure to elect a member of the executive committee in any district, the vacancy may be filled by a two-thirds vote of the members of the society present at any regular appointed meeting.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactians of the society, including an itemized account of all money expended during the year, in addition to such matters as are now specified in the law relating to the same.

CHAPTER 526, LAWS OF 1889.

SECTION 5. And further, there shall be printed annually upon the approval and order of the commissioners of public printing, ten thousand copies of the transactions of the Wisconsin State Agricultural Society, the same to embrace the reports of the county and other agricultural societies, and such matters pertaining to the agricultural industries of the state as shall be deemed important, provided the whole number of printed pages shall not exceed four hundred. Seven thousand copies of the transactions of the Wisconsin State Horticultural Society, the same to embrace such abstracts of reports of county and other horticultural societies, and such matters pertaining to the horticultural interests of the state as shall be deemed important, provided that the whole number of printed pages shall not exceed two hundred. Eight thousand copies of the transactions of the State Dairymen's Association, the same to embrace such other matters pertaining to the dairy interests of the state as shall be deemed essential, provided that the whole number of printed pages shall not exceed two hundred. Twelve thousand copies of the report of the Agricultural Experiment station of the State University, provided that the whole number of printed pages shall not exceed two hundred and fifty. Two thousand copies of each of said reports to be bound separately in cloth, all others singly in paper.

SECTION 6. The reports provided for in the preceding section shall be distributed as follows, through the superintendent of public property: Fifteen copies to each member of the legislature, fifty copies to the State Horticultural Society, ten copies to each county agricultural society, and district industrial association, which embraces two or more counties and furnishes the State Agricultural Society a report of its proceedings, to each of the four societies named in the preceding section, fifty copies of each of the reports of the other three societies, twenty-five copies of each of the reports to the library of the state university; to the governor, lieutenant-governor, secretary of state, state treasurer, attorney-general, state superintendent of public instruction, railroad commissioner and insurance commissioner, twenty-five copies each; to the state superintendent of agricultural institutes, fifty copies; to the superintendent of public property, commissioner of labor statistics, adjutant-general, quartermaster general, state board of health, each ten copies; to each public library in the state, two copies; to each state normal school, two copies; to each of the state charitable and penal institutions, one copy; and the remaining copies to the respective societies for distribution by their secretaries.

SECTION 7. In no case shall the number of printed pages in any report provided for in the act exceed the maximum number specified, except upon written request of the officer submitting the same, and then only upon previous written approval of a majority of the commissioners of public printing, such application and approval to be filed with the secretary of state.

CHAPTER 417, LAWS OF 1889.

SECTION 1. The governor is hereby authorized to set apart by proclamation one day in each year to be observed as a tree planting or arbor day, requesting all public schools and colleges to observe the same by suitable exercises, having for their object the imparting of knowledge of horticulture, in the department known as arboriculture, and the adornment of school and public grounds.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 16, 1889.

JOINT RESOLUTION NO. 19, A.

WHEREAS, The Wisconsin State Horticultural Society has many valuable books which it is desirable shall be preserved; and

WHEREAS, Many such have heretofore been lost in moving from room to room; therefore,

Resolved by the assembly, the senate concurring, That room number twenty-seven (27) in the capitol, is hereby set apart for the permanent use of said horticultural society; provided, that nothing herein contained shall be construed to prevent its use by the clerical force of either branch of the legislature during any session thereof.

REPORT

OF THE

TRANSACTIONS AT THE SUMMER MEETINGS

OF THE

WISCONSIN STATE HORTICULTURAL SOCIETY.

At G. A. R. Hall, Kilbourn City, June 23, 24, 1891.

Meeting called to order at 11 A. M., by President M. A. Thayer and the following committees were appointed:

On Fruit — A. J. Phillips, West Salem; A. D. Barnes, Waupaca; Mrs. N. Palmer, Brodhead,

On Flowers — Mrs. E. A. Hoxie, Evansville; Mrs. J. McGillivray, Black River Falls; Wm. Springer, Fremont.

On Program — B. S. Hoxie, Evansville; Prof. C. W. Smith, Kilbourn City; Prof. E. S. Goff. Madison.

On Exhibits — A. J. Phillips, West Salem; L. G. Kellogg, Ripon; D. C. Converse, Ft. Atkinson.

On Entertainment — L. H. Brown, S. Brown, Kilbourn City; W. A. Ramsey (address not known).

On Music — J. E. Jones, Kilbourn City.

In stating the object of the meeting President M. A. Thayer said: There is one way in which the people of your city are liable to make a mistake. We did so in Sparta two years ago when the summer meeting of this society was held there; we thought the premiums offered were only for the members of the State Society and that exhibits were expected to be made entirely by them. Now I do not want you to err as we did; this meeting is for you as much as for us; the exhibits are wanted from the people of the place rather than from the State Horticultural Society. In Sparta, after we understood it, we went around and solicited exhibits from the growers of house plants and the result was that several who did not think they had anything worthy of exhibition received premiums to the amount of six or seven dollars. We want you all to bring in your plants and flowers, this is your meeting; we hope you will consider it as such and that it will prove benificial to you as well as to us.

Motion made by Mrs Campbell that Sec. Hoxie be a committee of one on courtisies; motion prevailed.

The Secretary announced the program for the afternoon session and an adjourment was declared.

G. A. R. HALL, 2 P. M.

President M. A. Thayer — Before opening formally, I wish to say a few words to the people and children who are assembled here. We have come to your beautiful city to transact business for our society, but we want you to feel that this meeting is for the general good of all. We would like to have questions sent up to the table, after the reading of each paper, relating to the subjects under consideration, because it is the discussions that make these meetings profitable. We will provide competent persons to answer them and we hope you will not forget to send them up.

After singing, by a quartette of ladies, J. E. Jones, Kilbourn City, gave the following address of welcome:

Mr. President, Ladies and Gentlemen of the Wisconsin State Horticultural Society: In olden times, when cities were surrounded by gates and walls it was the custom to present to guests and visitors the keys of the cities as a token of respect and an indication of the cordiality of the welcome tendered them, but there are no gates and walls to the city of Kilbourn. If we had met you with maidens decked with flowers, forming a procession heralded by bands of music, your entrance into our city might have been more triumphal, your welcome more elaborate, but none the more cordial. We welcome you to the hospitality of our homes, we invite you to the enjoyment of our beautiful scenery and hope that your stay among us will be productive of mutual good.

Your society seems to have found a word big enough and broad enough to employ — if I may be allowed to coin a word — the effeminate side of agriculture, for this is what the cultivation of fruits and flowers seems to me to be. It is the part of agriculture that softens and adorns, that gives tone to the surroundings.

I might present to you the picture of a home whose owner cultivated flowers and shrubbery, making his home attractive to its inmates and an object of beauty to the passer by, on the one hand, and on the other, one that has no indication of cultivation in its surroundings; the one evidencing happiness and prosperity, the other thriftilessness and discontent; the illustration serves to show the need of the work of your society.

Your welcome is not an unappreciative one; we know who you are and how much to appreciate your presence in our midst, we expect to be profited by your meetings. We feel that we may hope another season, after having had this convention, to surprise you with the improvement we have made.

About four months ago your president came among us and organized a Horticultural Society; at present it is small but it is growing. But few of the village people have become members as yet, and it may be your duty as a state society to demonstrate to the people as I said before, that the term horticulture embraces all of the effeminate side of agriculture, the cultivation of fruits and flowers, that it relates to home adornment and village improvement.

I do not wish to spoil your welcome by prolonging it, and will leave you to the free enjoyment of the beauty of your surroundings, the Dells, the glens, and the many places of interest for which the Wisconsin river is noted.

RESPONSE.

By J. J. McGillivray, Black River Falls.

Mr. President, Ladies and Gentlemen: It would be hard for me to respond to this gentleman's eloquence, but we wish to thank you for your cordial welcome to this delightful spot; we thank you for your invitation to meet with you.

I want to inform you that the Wisconsin State Horticultural Society is a traveling show of fruits and flowers. We feel that we have received a profit from the meeting of the state society with us last summer at Black River Falls, and we feel sure that you will be profited by our meeting with you.

Horticulture is a business in which all can enter. It is not merely for retired capitalists, merchants and men of leisure, but it is one which all can enter and be profited. We are glad ths is the case and we are glad that God has placed everything here to make our work in this profession so successful in this locality and we are confident that He will not lay the sickle until the harvest is ready.

Again thanking you for your very cordial welcome, I leave the meeting in your hands.

FRUIT REGIONS OF WISCONSIN.

By A. L. Hatch, Ithaca.

Mr. President, Ladies and Gentlemen: — I regret exceedingly that I have to stand here after so much eloquence and grace and lead your thoughts so quickly from the ornamental to the practical, but I will endeavor to be brief in the treatment of my subject.

If we look over the state of Wisconsin we will find it is a great state in its area, greater than all New England in its possibilities and nearly as great in its area. We have a unique fruit country. (Mr. Hatch illustrated his remarks by the use of geological charts showing the different formations, deposits, etc.) You will see here on these maps the igneous rocks, Potsdam sandstone beds, the driftless area — an area of about ten thousand square miles; this region is cut into deep valleys and represents the ridge land and valleys; here you have the galena beds and the sandstone and limestone formations.

The greatest beneficial [though generally considered a calamity], was the glacial drift; it brought soils and pulverized down the rocks and gave character to this region, it is going to be the geological region of the base rock. The tilt of the base rock gives rise to the artesian wells and that in itself is a unique fracture in Wisconsin horticulture.

We find that Wood county is accredited with having about two thousand acres of cranberries. The cranberry is a plant that avoids limestone. Juneau county is next on the list, having nearly one thousand acres, the next is Jackson county with a little less than 800 acres. The crop, as reported in 1888 or 1889, is very near 200,000 bushels, according to the published statistics. The next important crop in that section is the blueberries and huckleberries.

In localities favorable to artesian wells, small fruits, especially strawberries, can be successfully grown as the flowing wells would afford water for irrigating purposes, thus causing the fruit to fill out and mature, resulting in large yields, while without irrigation poor returns would be had in times of drouth.

The value of artesian wells to small fruit growers is but dimly realized at the present time.

In Portage, Wood, Jackson, Juneau and Monroe counties is an immense tract in which the soil is nearly or quite free from lime. The apple does not and cannot thrive in this region, but it is a paradise for the cranberry, huckleberry and blueberry. I have been informed that from 25,000 to 30,000 bushels of huckleberries and blueberries are annually shipped from this region by a single line of railroad, and this represents but a fraction of the entire product.

About 80,000 barrels of cranberries were shipped from this region last year. Probably few of you have ever realized the magnificent proportions of that industry, the huckleberry and blueberry crop, and although it may never be successfully cultivated, it is an industry that can be saved and the tract of land made productive. This vast tract should be developed for those fruits that cannot endure a limestone soil. On the other hand there are large areas in the state in which the natural rock is limestone, and these are adapted to apple culture wherever we find the climatic conditions to be favorable. The bluffs of Richland and Sauk counties and a large region bordering Green Bay have a sandy clay soil resting on a bedrock of limestone, the proper conditions for the apple. The Green Bay region is specially favored, because the ice which is retained in the bay late in spring tends to cool the atmosphere, and that retards the opening of the flower buds. The time will come when these regions will be famous for the products of their orchards.

It is common to say of Michigan and Ohio, "they are the apple states;" yet I have heard it said that one county in Wisconsin furnished more apples than both of them put together. I believe there are some soils for apple culture in the vicinity of Antigo, superior to any country yet known and I believe when some of our bankers, our capitalists, go out to buy land on which to cultivate apples they will find we have better land than they have in those so-called apple producing states.

I know that fruit growing has always paid me, although I have had failures as well as success.

When the assessor found out how many cats and dogs, old wagons and watches I had, I asked him what he wanted to know about horticultural products. He said, "Oh! aren't they about the same as they were last year?" Now, you can guess about what kind of reliable statistics he will report.

I believe, when Wisconsin horticulture is developed that it will no longer be said that is is not a fruit growing state, and that it will be considered as good a state for a young man to settle in as any in the United States, and that the United States is as good as any country in the world.

[Secretary spoke of the statistics being so incorrect that they ought not to go into the volume that is just going to press.]

WM. TOOLE — I move that our secretary be instructed to put the statistics of fruit growing in the volume with the comments necessary, for the purpose of calling the attention of the people, in the state, to them, who do not know their accuracy. Motion prevailed.

Z. K. JEWITT — I think the statement with regard to blueberries is far too low, it should be four times as much.

A. L. HATCH — It is extraordinary then.

PRES. THAYER — Friends, the question that I think should come in here is, what kind of soil is essential to growing apples? Are conditions in Kilbourn and vicinity right for apple growing?

(A VOICE.) That is what we want to know.

A. L. HATCH — I find that the Wisconsin valley has a climetology of its own. I found the Harrison rose and the Flowering Almond growing there without protection and I believe that right along this Wisconsin valley apple growing will be successful. If a man has Potsdam as a basis or would strike it in going two or three feet he would not be successful in growing apple trees because the soil would be too cold and sour for the roots.

PRES. THAYER — What can be grown there?

A. L. HATCH — Strawberries would grow there although owing to sweep of winds and untimely frosts, you might have a spot that you could not grow them successfully on.

Every man must be his own judge about the climatology of his location.

EVERY SCHOOL A HORTICULTURAL SOCIETY.

BY PROF. CHESTER W. SMITH, Kilbourn City, Wis.

In these delightful days of June, so full of music of birds and odor of flowers, it is easy to lose one's self in the blissful realm of the ideal. We are prone to

> "Go abroad.
> Upon the paths of nature, and when all
> Its voices whisper, and its silent things
> Are breathing the deep beauty of the world,
> Kneel at its simple altar."
>
> "There is to me,
> A daintiness about these early flowers
> That touches me like poetry. They blow out
> With such a simple loveliness among
> The common herbs of pastures, and breathe
> Their lives so unobtrusively! like hearts
> Whose beatings are too gentle for this world.
> If life were but one long June"

no mind could imagine a higher heaven nor a paradise more perfect.

But the chief end of man is not to fritter away his little life in day dreams of this unachievable. "Life is real," and he alone is successful who makes life earnest; earnest in the love he bears to humanity; earnest in the effort he makes to serve that humanity wisely; earnest in having a true purpose and earnest in working out that purpose patiently, persistently and honestly.

Without taking your time to prove the worthiness of the purpose of this Horticultural Society, I wish you first to notice that the objects for which this society was organized come home to the interests,— to the pockets as well as the hearts — of all classes of people. The Horticultural Society is not an association to monopolize the strawberry trade. It is not an association of but one kind of specialists, although there should be — there must be — specialists in each of its many departments. I say there should be specialists for each department for life is too short for any one man to acquire an intimate knowledge of even one of the three great kingdoms of nature. In what ever lot your life may be cast, whether in sunny climes or northern snows, in the poor man's hut or the palace of the wealthy, whether you are ignorant or educated, young or old, you love the green grass and the cool shade, the luscious fruits that a home has made. I shall leave to another's paper the pleasant task of showing the moral influence of the development of this natural love of nature. I assume that the study of nature is good for the heart.

No, the aim of this society is not to organize a new "trust" so that a few may ride where many must walk, but it is to help cultivate in all classes the natural love of the beauties of nature so that the poor man may really and truly inherit the earth, not as a barren desert but as a garden of bliss, of trees and treasures of flowers. It gives me unspeakable joy to say to you that the title of my paper is not a visionary scheme, but already nearly an accomplished fact. All over this fair state of Wisconsin are school-houses, little and big, like flowers dotting the landscape. The custom of observing Arbor Day in these schools is comparatively a new one, but the eagerness with which the children respond to proper encouragement in the work, shows that no backward step can now be taken. The encouragement given Arbor Day by this society has been a great and constant benefit. Every school should be a horticultural society. Not that every pupil should formally join this society, but every teacher in the state should know of its existence, its purposes and methods of working. Every teacher should be interested in the success of this society and so impress his or her pupils with the importance of its objects.

Now I do not believe in trying to follow a half dozen professions. I believe the teacher's only business is not only to teach school but to teach a good school, and I do not urge this observance of Arbor Day and the cultivation of flowers and trees upon schools as a special study or as a new duty. It is not a new duty. This encouragement in the beautifying of school yards and door yards, roadsides and cemeteries is right in the line of educational work. It is especially true in this modern moral suasion age that no school is much of a success where there is not harmony of sentiment between teacher and pupils, and this work of teaching children to take an interest in horticulture as it relates to flowers and trees, this effort of the teacher to get near to nature's heart is the only royal road I know of that leads straight to the childish heart. George Eliot says: "A difference of tastes is a great strain upon the affections." The converse of this is that a union of sympathies is a foe to discord and a surety of success. But does this love of nature's good cheer, and this great outdoor paradise come in the line of the childish sympathies?

Go with me some fine morning in June, to any country road that leads to the little school-house. Watch the little boys, most of them, and all of the little girls — bless their sunny hearts — what are they doing along the road? Picking flowers. It depends upon who the teacher is whether they are picking them for her or not. It does not matter that "teacher" has never asked for these first flowers of the season. These buds of love for flowers are in the hearts of all children, and in the spring they begin to swell, and only await the soft showers of encouragement and warmth of sympathy to bring them forth to blosson into the rarest of plants. I know that in some hearts these buds are latent. I know too that in some schools no soft showers of encouragement and warmth of sympathy ever beam from the stern and watchful eye of the teacher of books. The teacher who has never heard of the great free world outside the school-room except by the adjectives horrid, wet or dusty, too hot or too cold. But such school keepers are exceedingly rare, thank heaven. I know too that these buds of love for the true and beautiful in nature are latent in the hearts of thousands of city children who never have seen a wild flower nor heard a free bird sing. God pity them, and God bless the great hearts that are bringing fresh showers to these withering buds through the medium of the Fresh Air Fund.

These illustrations not only prove that this branch of horticulture exists naturally in every school, but, also suggests the wisdom of the movement to guide these tastes in children to beneficial results. I do not wish to form a new society, but there should be some system in the methods by which teachers are to kindle and encourage this love of tree and shrub. The plan is well started. The governor has but followed the lead of other states in offering a reward to the school making the most improvement in its yard and surroundings.

Why should not this society be in closer touch with the teachers of the state! It is easy to get the addresses of these teachers. It is easier to get the addresses of the county superintendents of the state. Would it be expecting or asking too much that each teacher report to the secretary of this society once a year, the work done in her school? Much ignorance prevails among teachers upon the kind of work to be done and how to do it. Two years ago I found myself in need of information about Arbor Day, and upon writing to Mr. Hoxie, I received just what I wanted. I am certain that teachers would be benefited by definite instructions as to how and what to plant, how to cultivate, and, also, how to organize their schools into successful working societies. Considering the work done by the state officers to popularize this work, it would be easier for a representative of this society to gain the co-operation of county superintendents at their annual state conventions.

These are but suggestions. As a teacher, as a citizen and parent, I am interested in this work of humanizing and cultivating the higher tastes of the rising generation. Every act done to inspire a respect and love of home in the hearts of our future citizens will be so much to stem the tide of tramps that seem slowly but surely undermining the foundation of our civilization.

The culture of trees and flowers develops a permanent love of the spot where they grow. The man or woman is not living who can go back to the dreamy days of childhood and call up the scenes in that long ago when "you and I were young Maggie," and not remember the trees and flowers he loved, the little brook leading through the meadow from the spring! The flowers his mother used to tend by the side of the path that led to the front "gait!" Alas, we cannot know those joys now, nor sing those songs again, but we can help our own boys and girls to appreciate the good, the true and the beautiful. We can do more than plant a tree. We can plant a custom in the school system of this nation of tree culture and flower culture and home culture.

SEC. HOXIE — I wish to thank Prof. Smith for the suggestions contained in his paper and would also like to take about three minutes to say a few words about the subject of Arbor Day, because our Society was the first to take action upon it. I sent out last spring three thousand circulars relating to the observance of Arbor Day. State Superintendent Wells sent out five thousand. The superintendent of Calumet county sent to me for circulars to distribute among the teachers in his county, and thus the work begun has grown on our hands; next year we hope to do much more. I sent a program to Superintendent Wells and invited him to attend this meeting. I will read the short letter received from him in reply:

JUNE 19, 1891.

B. S. HOXIE, Esq., Evansville, Wis.

Dear Sir — I am in receipt of yours of the 8th inst. and I thank you for the invitation, and regret that I shall be unable to attend at Kilbourn City owing to previous engagements; but I am in most hearty accord with the spirit and purposes of your Society. I am able to assure you and the Society that special improvements of many school grounds has resulted from the effort made by you and others to call attention to the purposes and means of Arbor Day observances.

Respectfully,
O. E. WELLS,
State Superintendent.

PROF. GOFF — I want to say a few words about Prof. Smith's paper; the only thing lacking was he did not go half far enough. An old gray-haired German who helps me on the Experimental Farm said to me, in very broken English, as I set a graft, "that is just the way my teacher taught me how to set a graft in Bavaria forty-five years ago," and I thought that in Germany forty five years ago, they were ahead of us; they did not teach so much of bank accounts as we do, but they taught the rudiments of horticulture.

A. D. BARNES — I would like to say a few words about horticulture in Waupaca. We have a society there that is doing good work; we hold our meetings regularly and they are well attended, we expect our society will be productive of good for our town. We have improved the surroundings of our school house and we are fitting up a public park that is finely located, and when completed, will be a great acquisition.

PROF. CLARK, Baraboo — The local society of Baraboo held a horticultural show at the time wild flowers were in bloom. Premiums were offered by members of the horticultural society; we gave the pupils a half holiday, if we may call it so, and they took a great deal of interest in the work of preparing for the exhibit. I would like to make the suggestion that the state society would do better to co-operate with the teachers and schools, in regard to Arbor Day observance, than with the local societies.

SECRETARY — We have in the state about fifteen or twenty societies and about twenty thousand schools, hence you see that it would be a more difficult matter to interest all the schools in our state to secure their co-operation. Baraboo has a live society and so has Sparta, and several others I might mention.

M. A. THAYER — At our Arbor Day meeting last spring, I made a proposition to all the school children of Sparta that I would give each one, who would set out and care for them, two raspberry plants. I would give them instructions in planting, and to all who made them live I would give four plants the next year. About 400 children availed themselves of the offer.

This proves to me that an intense interest can be awakened among children in regard to horticulture. It is an intense pleasure to the children to have a growing plant to care for and I hope the time will come when the state society will say to every child he can have a choice raspberry or some other plant that he may care for.

J. S. HARRIS—I know your time is limited but I would like to talk on this subject. While I believe every school should be a horticultural society, every horticultural society is a school. It used to be thought that horticulturists, like lawyers were born, now we know they must grow. The possibilities of fruit culture in Wisconsin, or Minnesota, would no longer be an uncertainty if children were properly instructed and taught to love it. I believe that the rudiments of horticulture should be taught in the schools and if it is correctly taught so that the proper conditions for successful fruit growing are understood, these prairies, devoid of forests, that let the winds sweep over you and destroy your fruits, will be avoided when the selection of a site for an orchard is made.

WM. TOOLE—We all realize that the topic under consideration covers very broad ground; we cannot do a great deal in the line of Arbor Day observance without considering the children's right to the play ground. While our school grounds should be provided with a certain amount of shade trees, shrubs and flowers, there should be sufficient room for athletic games and recreation. We find agents going all over the country selling trees to districts, to set out on school grounds, with the understanding that they will replace all that die out. While some may think this desirable it is much better to know how to set out trees to make them live than to set them improperly and have them die, because they are unsightly until re-removed and the object sought is defeated.

CHAS. HIRSCHINGER — The principal question about Arbor Day was, "where can we get trees and shrubbery at wholesale rates?" Agents say, "send me the list of twelve varieties that the Wisconsin State Horticultural Society recommended people to set out." So you see it gave those fellows something to work on.

J. S. HARRIS—When you get this movement properly worked up, the state, or some other authoirty, will give the trees and then there will not be so much of an opportunity for the tree peddlers to drive their trade.

SECRETARY—I never counted up or gave the subject a thought before, but I guess there were just twelve trees recommended for Arbor Day planting, and I presume if they were still further designated, as to the fitness for certain localities, there would be the same set of questions or similar ones to reply to. So you see these things cannot always be provided for because we cannot foresee what contingencies may arise.

A HORTICULTURAL TRIP WITH A REPORT OF TRIAL STATIONS.

BY E. S. GOFF.

That much may be gained by visiting neighbors who are engaged in the same calling as ourselves, is a truism that scarcely needs to be repeated. But I know full well both from experience and observation, the difficulties that arise to prevent most private horticulturists from making anything like extended tours of observation among their co-workers. It occurred to me therefore, that I could perhaps not serve our mutual interests better than in visiting some of the more successful orchards and gardens in the state, and in briefly communicating to you such items of interest as came under my observation.

With this idea in view, I left Madison early on the morning of June 3, for the purpose of visiting, among other places, certain orchards located north of Green Bay, from which very flattering reports had reached my ears. My first objective point was the home of our revered ex-President Smith, who had expressed a desire to accompany me in my visit to these orchards, and whose companionship I much desired. But I had already been advised of Mr. Smith's feeble health, and therefore hardly dared to hope that his strength would enable him to carry out this design. I found him slowly recovering from a very severe attack of *La Grippe*, in the worst stage of which, his friends had almost despaired of his recovery. At this time he was able to walk about his garden freely, but not sufficiently recovered to warrant a longer journey. Mrs. Smith had also been a sufferer from the same malady, but to a less serious extent.

Mr. Smith still maintains the enthusiastic interest in his gardening operations that he has shown for so many years. His energy does not fail with his declining strength, and he continues to project and carry out improvements. The past spring he has put down an extensive system of water pipes in his garden from a flowing artesian well on the premises of an extensive brewery adjacent to his garden, by means of which he is able to water a large part of his crops, and the unusually severe drought of May gave him an excellent opportunity to test the value of this improvement. He finds it of very great benefit, though of course not a complete substitute for timely rains.

Mr. Smith's strawberry beds promised a good crop at the time of my visit. The plants were considerably restricted in growth by the dry weather, but were well set with fruit. Among the small fruits, however, the currant promised best. I have certainly never seen a finer show of fruit than was presented by Mr. Smith's plantation of the Prince Albert and Long Bunch Holland currants. The branches of the well-pruned bushes were wreaths of fine clusters that sometimes almost concealed the leaves. The Fay currant does not succeed with Mr. Smith. He finds its stems too brittle, and the plant unproductive.

The blackberry and raspberry do not thrive as well as the strawberry and currant under Mr. Smith's exceptionally high culture, a fact which helps to confirm the view that has often been expressed, that these fruits succeed better on land of moderate fertility than on very rich ground.

The next morning, Mr. Howard J. Smith, a son of our ex-president, accompanied me to the orchard of Mr. O. C. Cook, at Oconto, about 30 miles north of Green Bay City, on the west shore. A ride by carriage of 4 miles to the south-west from that station brought us to the pleasant home of Mr. Cook, which is surrounded on all sides by his orchards and nurseries. Mr. Cook received us cordially, and was very communicative as he showed us about his grounds.

Oconto is very nearly in the latitude of St. Paul and Chippewa Falls, or about 150 miles north of Kilbourn City. It is some ten miles south of the 45th parallel, which marks the northern boundary of New York and Vermont, and so far as I can judge, is within a mile or two of the latitude of Dr. Hoskin's famous orchard of Newport, Vt. It is, so far as my knowledge goes, the most northerly orchard of any size in the state, though it is much more successful than very many orchards located much further south.

Mr. Cook has now 800 bearing trees, from which about 1,500 bushels of apples were sold last season, and which promise a fair crop this year. The trees, for the most part, are looking well. I saw very little evidence of sun-scald, and still less from blight. Even the Russian pears, of which Mr. Cook is testing several varieties, have thus far been free from blight. No less to my surprise, Mr. Cook informs me that he is very little troubled with the codling moth or apple scab.

In regard to varieties, Mr. Cook places McMahan at the head, finding it superior to the Duchess in several respects. His choice of varieties for an orchard would be McMahan, Wealthy, Duchess and Haas in the order named. Strange to say, the Fameuse, which is a great success on the other side of the Bay, has failed at Oconto. The same is true of Wolf River. Ben Davis is also a failure. The Pewaukee, Walbridge, Tetofski and Yellow Transparent are successful. The latter blights somewhat. The Red Astrachan and Red Lake Winter crab have failed.

Mr. Cook has not protected the trunks of his trees, but most of them are headed quite low. He is a firm advocate of mulching and manuring, as the ground beneath his trees fully testified. He mulches every year if possible with straw or coarse manure. His soil is a rather light loam, underlaid with sandy clay, and a portion of it has been underdrained. The orchard, and the entire country about Oconto are nearly level, but Mr. Cook would prefer a slope to the northeast.

Mr. Cook commenced planting apple trees in 1866, at a time when the country about Oconto was very little improved. The first trees set, which were crabs, are still vigorous. He has gradually increased his plantings and has at present a considerable number of trees that are not old enough to bear. He has made quite an extensive trial of the Russian apples, and while he thinks we shall secure a few valuable acquisitions from among them, his success has not thus far been encouraging.

Mr. Cook prefers to plant apple trees in the fall, and then to mulch them well with coarse manure or straw. Trees thus planted form rootlets during the fall and early spring and are hence in much better condition to commence growth and to endure spring droughts.

Mr. Cook's nursery, in which he is doing a considerable local business, appears well stocked with the more hardy varieties.

The next day a delightful ride of 5½ hours by steamer, over the waters of Green Bay, brought me to the thriving village of Sturgeon Bay, which is situated nearly opposite Oconto, in the peninsula of Door county. Mr. George Smith, of the firm of Smith Brothers, accompanied me on this trip. A ride by carriage of three miles brought us to the extensive orchard of Mr. Joseph Zettle, of which I had often heard, and which I was very desirous to visit.

We found Mr. Zettle in rather feeble health, but in good spirits, and very willing to show us about his grounds. It was at once apparent that the favorable reports I had heard of this orchard had not been overdrawn. The few missing trees in the rows, the absence of dead shoots resulting from blight, and the entire freedom from the evidence of sun-scald on the trunks and branches, gave the orchard an appearance of thrift that I have not seen surpassed, if equalled in Wisconsin. It was plain on entering the orchard that Mr. Zettle's success in apple growing has not all been due to that vague entity which we call good luck, for evidences of care and thought were everywhere apparent. Here and there among the branches of his trees were neatly painted bird houses which told us that Mr. Zettle appreciates the services of our winged friends in ridding our orchards from insect pests. The trunks of very many of his trees are protected by means of straw or building paper, and little bunches of hay or pea straw were placed in the more exposed crotches. On being asked the object of this latter precaution, Mr. Zettle replied in substance: "The upper side of the crotch of an apple tree is a weak point, especially if exposed to the sun, or so located that water collects in it. The straw not only protects the bark from the sun, but it tends to prevent the freezing of the bark in winter, which is a serious matter if water has accumulated in the crotch." The soil beneath his trees showed evidence of repeated mulchings. "I always mulch my bearing trees," Mr. Zettle remarked. "It keeps the soil moist and cool, and prevents injury to the falling fruit." His orchard has been in grass for eighteen years. He prefers to cultivate the ground until his trees commence bearing, and then to seed down to clover. He removes a crop of hay during the summer, but does not pasture off the second growth, believing it wiser to leave this on the ground to protect the soil from severe freezing, and to act as a fertilizer. If his seeding runs out he renews it without breaking up, by raking in clover seed in the spring.

Mr. Zettle's orchard, like that of Mr. Cook, at Oconto, is very little affected with blight. Even the Alexander blights very little here. Mr. Zettle is little troubled with the codling moth or apple scab, and estimated that not more than one-eighth to one tenth of his fruit is wormy in the worst seasons. Even the Fameuse is practically free from scab. It is of interest that this variety, which is nearly a failure at Oconto, is one of Mr. Zettle's favorite apples. The trees are almost uniformly productive and the fruit is large and fair. The Longfield is also a great success with him as is the Duchess; and the Jonathan is fairly successful. Mr. Zettle has planted quite largely of the more approved Russian varieties, but few of these trees are as yet old enough to bear. He showed us an orchard of ten acres planted during the spring of 1890 and '91. Not all of the trees in this orchard, however, are Russians. Mr. Zettle has grown many seedlings from trees of the Duchess standing adjacent to other varieties. Some of these he has found sufficiently valuable so that he has grafted them upon other trees. In this work, he seems to have had no other motive than to increase the value of his own orchard. Mr. Zettle is a firm advocate of the orchardist growing his own trees. He grows his as far as possible, and is especially careful to preserve the tap root in transplanting. He will not allow this to be cut off with the spade, but digs sufficiently deep so that it can be taken out entire. In settting out, he digs a hole large and deep enough to accomodate all the roots except the tap-root, and then makes a hole with the crow-bar for this. He stated that in time of draught, he can easily discern the difference in growth between trees of which the tap-root has been sacrificed, and those of which it has not.

Although Mr. Zettle has not been an active member of our society, he has been a careful reader of our reports, and he stated that is was largely through these that he planted his first orchard. We have here an example of the good that emanates silently from these semi-annual gatherings, and it should inspire us to greater devotion and energy in our work to learn that orchards are being planted, and homes both in country and city are being provided with wholesome and delicious fruits as the result of our deliberations in these meetings.

I did not learn the number of bearing trees in Mr. Zettle's orchards. I incline to doubt if he knows the number. He stated that his sales of apples in the average season amount to about 2,500 bushels, but added with a significant twinkle of his eye, that his estimates are generally conservative. He believes that his locality is superior to Michigan for hardy apples from the fact that the bay to the west freezes over in winter, and the great body of ice thus formed tends to cool the air of spring and thus to retard the starting of his trees. In some seasons the period of full bloom does not arrive until June, and at the time of my visit, (June 4), many of his trees were still in blossom.

Mr. Zettle commenced planting apple trees in 1864. He showed us the first tree set, which is a Fameuse, and still in a thrifty condition. I measured its trunk, and found it to be 45 inches in circumference at a height of two feet from the ground.

The next day I made a short call at the home and gardens of Mr. J. P. Roe at Oshkosh. Mr. Roe's specialty is tomato growing and he had several acres planted out to this vegetable at the time of my visit. The plants, and his gardens in general were looking well taking into account the exceptionally severe drought that was prevailing at that time. He is an enthusiastic fruit grower, and has just renewed an orchard that was severely handled during the winters of 1884 and '85. He has grown several seeding apples and a seedling grape that are decidedly promising: Two of the former I believe have been introduced by Mr. Cotta of Nursery, Ill.

I next visited our trial station at Weyauwega, Waupaca county, which, as most of our members know, is in charge of Mr. Fred A. Hardin. Thus far in my journey, the severe drought that had prevailed over the entire state since the middle of April had been more or less completely broken by grateful showers, but on entering Waupaca county, I discovered with regret that no relief had come to that section, and I feared that our trial station would present a most unpromising appearance. But here I was agreeably disappointed. The trees had been well set and promptly mulched, and scarcely half a dozen out of a total planting this spring of something more than a hundred trees have failed. The soil at this station has in its composition sufficient fine sand to make it endure drought well. At the time of my visit, though almost no rain had fallen for more than six weeks, the ground beneath the mulching was moist to the very surface.

A few of the trees set last spring had set some fruit — a cheerful reminder that even among apples we shall not have to wait long before results begin to come in. The small fruits set last season are of course showing some fruit. Altogether, our trial station at Weyauwega presents an attractive appearance, and if it continues to develop as well as it starts out, we shall soon have an orchard there that will be a decided honor to our Society.

About two weeks later, I visited our trial station at Ithaca, where I also found things looking different than I had anticipated. The trees planted there last spring have nearly without exception survived, and are for the most part, doing well. The strawberry plants set the previous year were in full fruiting at the time of my visit, but as Mr. Hatch will make a report on them, I need make no further comments.

It was noticeable that in the two trial stations thus far visited, care has been taken to carry out the full spirit of the directions given. The trees and plants have all been carefully labeled, and the mulching and trunk protection has been attended to in a prompt and thorough manner.

NOTE—Owing to pressure of other work, it was found impossible to visit the trial station at Sparta before the summer meeting, hence this visit was postponed for convenience until September 4th, in order that the plum orchards of Mr. O. M. Lord, of Minnesota City, Minn., might be visited at the same trip. By this time the effects of the spring drought had borne their full fruit, and I was not surprised to find that several trees had failed. The conditions at Sparta are unquestionably less favorable for the tree fruits than at our other two trial stations. The apple trees had suffered considerably from the red-humped apple tree caterpillar *Oedemasia concinna*, which had in several instances eaten off the greater part of the foliage.

It is well known that no part of our state is better suited to the culture of small fruits than Sparta, and all the plantings of strawberry, raspberry and blackberry were looking well, not only from the fine growth that the plants had made, but from the excellent care they had received.

On the whole, our Society has reason for congratulation for the successful inauguration of our trial station work.

A. J. PHILLIPS — I have visited the Trial Station at Sparta, twice this spring and found the trees well mulched and well cared for. The conditions at Mr. Hatch's Station, as well as the one at Weyauwega, are very favorable. I think with the unfavorable conditions at Sparta, that anything Mr. Thayer succeeds with will be a success in any part of the state.

SECRETARY — I want to say one word with regard to our trial stations and their object. There was a need for places of this kind where we, as a society, could conduct a system of experiments and settle questions and doubts for the many. Hundreds of dollars have been expended by individuals in experiments that could have been saved to them if there had been trial stations established for that purpose. We were only able to establish three; we were in hopes to get an appropriation last winter from the legislature that would enable us to establish other stations and give us more funds to better equip those we now have. It not only requires money, but patience, time and labor to forward this work. We were unable to secure an appropriation and with only one thousand dollars to carry on the expenses of this society we are not able to do as much as we ought to do.

DISCUSSION.

Drouth, How to Guard Against it Successfully.

A. J. PHILLIPS — I think the best way to guard against drouth is for one to be supplied with water as Mr. Smith is, and use it thoroughly.

MR. THAYER — It is not practical.

A. J. PHILLIPS — I think Mr. Thayer's success is attributable to thorough cultivation, and I believe thorough cultivation is the fruit grower's salvation.

A. D. BARNES — I believe that we at Waupaca are in the very heart of the drouth, we were sixty-four days without any rain and our system of thorough cultivation with plenty of mulch gives us a good show for all small fruits.

Z. K. JEWETT — The fault with many growers is too deep cultivation. We do not need deep cultivation but shallow cultivation is all right, it is all that is needed.

SECRETARY — I think that fact ought to be emphasized; it is what progressive farmers bring out at the Institutes — proper preparation of a good seed bed and then shallow cultivation.

M. A. THAYER — I wish to reiterate what has been said on the subject of shallow cultivation. I practice it and you cannot see any effects of drouth on my fruit farm.

Voice from the audience — Do you cultivate your strawberries? I have somewhat this year, but I mulch my strawberries heavily and by so doing avoid loss by frost.

N. N. PALMER — Some years ago I attended a meeting at which Prof. Henry was present, having just returned from a visit to California and he spoke of the shallow cultivation being practiced there so successfully. He said that by shallow cultivation, that is, merely breaking the surface — moisture is prevented from coming up to be evaporated.

A. L. HATCH — You said you kept mulching on your strawberry bed; did that mean all over the ground or over the rows merely?

M. A. THAYER — I put the mulch all over the ground in the fall and in the spring put it in the rows.

A. L. HATCH — Now your theory is all settled, but you have not stirred the ground and now where is all the theory of cultivation?

M. A. THAYER — All this is new business to me and I am experimenting. I have several beds and I took out plants from them for re-setting and selling so I have cultivated between the rows.

A. L. HATCH — Would you recommend cultivating between those rows in the spring?

M. A. THAYER — In ordinary years you will have no trouble by following that practice.

A. L. HATCH — Well, the question is whether you had better follow that practice *every* year? One-half of my bed of Crescents has suffered with the drouth; the Crescent and Warfield are prone to late fall growth and it cannot be prevented.

M. A. THAYER — Cut them off with your rolling coulter.

A. D. BARNES — We have a patent hoe in Waupaca county that we cut them off with.

M. A. THAYER — I do not believe there is any practical way of cutting them off.

WM. TOOLE — Cultivation compels them to make matted rows and unless we compel them to fill the rows they will have a tendency to throw out at the side instead of filling up in the center.

A. L. HATCH — Then you believe one good, strong plant is better than a half dozen small ones. Now you say you leave the mulching on. My brother practiced that, and I did also, once, and the mulching retarded the bed so much that we came very near not having a crop. It is well known among growers that the presence of mulching makes a difference of from three to seven days, and that often makes a difference of a crop of berries or no berries. My soil is not like yours, and I want to know how you can avoid that tendency?

SECRETARY — Mr. Hatch will be reminded that "one swallow does not make a summer," and the experience of fruit growers varies. Experience one year may not be the same again. It is not always that mulching causes a failure of a crop of berries by freezing. Prof. Goff told us how he and his brother saved a crop of strawberries by raking on the mulching. Mr. Hatch may have been one of those careless cultivators and may not have raked the mulching out of the rows or plants. Then again, the soils have to be taken into consideration as regards cultivation; a man having a stiff clay soil had better draw on sand and mix it with the soil until it is right for the growing of berries.

N. N. PALMER — I would like to criticize Mr. Hoxie a little with regard to what he says about a clay soil. Instead of drawing on sand keep the soil stirring, but look out for the time when the soil begins to bake. Mr. Alcott has succeeded with strawberries on clay soil when they could not raise them on sandy soil, at Brodhead.

CHAS. HIRSCHINGER — I think if Mr Hoxie had been raised on such soil he wouldn't want any sand on it.

SECRETARY — I think it requires a good deal of sand to make a proper soil to successfully grow strawberries, and when I see a man trying to grow strawberries on a stiff clay soil and almost making a failure of it, I advise him to prepare his soil by mixing sand with it.

MR. HANCHETT — I have had some experience in growing berries on clay soil, where the soil this spring was as hard as a pavement, and the cracks in it were so wide you could thrust your hand in them; blackberries and raspberries were growing finely but strawberries, just before the drouth was broken, looked as if we put a match to them they would burn, they were so dry. The great trouble is, we neglect cultivation until the drouth is upon us instead of keeping it up all the time.

M. A. **THAYER** — Mr. Hatch has asked a question that has not been answered and I want to answer it. I say no! you cannot make a rule that will apply to all men, to all conditions and all seasons.

A. L. **HATCH** — I had some straw a year old that I found far better for mulching than any other material I could get.

WM. TOOLE — Can you use clover mulch on strawberries or only on raspberries and blackberries?

M. A. **THAYER** — No, clover comes too late in the season for strawberries; I use rye straw.

A. L. **HATCH** — I like to use old straw for mulch because it breaks up a little.

N. N. **PALMER** — Wouldn't it do just as well to cut your straw.

A — I think not.

J. S. **HARRIS** — I think cut cornstalks are excellent for mulch. There are certain kinds of strawberries that are more successfully grown on a stiff clay loam. You will get along with fruit growing in most any soil if you do not have so much to do that you are obliged to neglect your fruit.

DISCUSSION.

On pruning to promote vigor and fruitfulness.

Prof. Goff being called upon to open the discussion on this topic said, "I would rather hear from Mr. Hatch because I got some good suggestions from him. There is a good deal of science as well as practice in this subject and I shall discuss it on the scientific side. I have had practical experience but you will excuse me if I give a little science in my talks. If roots supply too little moisture the tree will not make growth, if too much it will not produce fruit, therefore it is necessary to prune roots; sometimes the roots are feeble and cannot supply the top so we cut off the limbs to remedy it, and if the top is feeble and the roots too vigorous we need to cut off the roots. The practical fruit grower will know which remedy he needs to apply."

A. D. **BARNES** — What time in the summer would you prune to produce fruit?

A — In early summer.

A. D. **BARNES** — Would not sowing an orchard to millet retard growth? I want to retard an orchard of five hundred trees, will I succeed?

J. S. **HARRIS** — If the following winter should be a severe one, then goodbye to your trees, if you put on a crop to check the growth of them.

N. N. **PALMER** — What time would you prune to promote growth of the tree?

A — In early spring.

A. J. Phillips — I have found out, after twenty years of experience in orcharding in Wisconsin, that the less you prune trees after they are large enough to bear, the better it will be for them. If a tree lacks vigor do not go to work to cut off limbs because the more wounds you make in this climate of hard winters, the harder it will be for your trees. You could not hire me to prune a large tree; keep out the knife and saw, in this climate. You can use them in the south but you can't do it here. Manure and feed a tree to promote growth.

Secretary — Some of our growers, like Mr. Chappel, say never manure an orchard. It may be these different decisions have been reached by experience with different soils. Now what kind of soils would you manure?

A. J. Phillips — There you are! coming right back to that old question of sand again. From Mr. Chappel's standpoint it is all right, his soil is too rich and he uses sand.

Wm. Toole — I have the Perry Russet, good, thrifty trees, but no fruit. Now if pruning will help those trees to bear I would like to know of it, but if nothing but the pleasure of having healthy trees is concerned we had better do without them. You must stir the soil in a few days after a rain and then stir again, not waiting until after the lumps have formed. But I would very much like to know what to do with my Perry Russets.

Chas. Hirschinger — You want to prune your trees before the fifteenth of April if you do not do it before that time you have lost your fruit. Some people feed their trees as they do their horses, throw in a bushel of oats at a feed. Mr. Toole's land is pretty rich and was when the trees were planted and they have made growth instead of fruiting.

J. S. Harris — I would like to ask Prof. Goff if there is any method of pruning that will have a tendency to make the trees hardy?

A. D. Barnes — May I answer that? Prune down instead of up.
ripen the growth it will not increase hardiness.

Prof. Goff — I do not think there is; except you prune and it helps to

A. D. Barnes — I think a tree that is pruned down will be more hardy.

Prof. Goff — I would like to ask what Mr. Barnes means by "pruning down."

(Mr. Barnes explains by a movement of his hands.)

Chas. Hirschinger — Oh, that is an old exploded idea of getting the tops near the ground.

Adjourned.

EVENING SESSION.

Opened with music by the Kilbourn City choir.

Secretary announced that there were copies of the WISCONSIN FARMER for distribution and that the editor of that paper was present; also representatives of FARMER'S REVIEW and FARM, FIELD and STOCKMAN.

HOME ADORNMENT.

BY MRS. FLORENCE BRINKMAN, ALMA CENTER.

I would be glad if I were competent to do justice to the subject. Home, how many memories are associated with the word. Our childhood's home is the one bright spot to which we turn our thoughts. In after years it is the oases in the desert of life's pilgrimage, teaming with luxurious vegetation, where sparkling waters bubble up from earth's bosom, and trees, flowers and fruit abound and birds sing sweet, joyous songs. "*Home*" a word of which no other is half so dear, except 'tis mother.

A being with out a home is at all times an object of pity. Even the foxes have holes and the fowls of the air have nests, but "The Son of Man hath not where to lay His head" such were the words of one whose command of language was supreme and who knew the human heart. It is a trite saying that "home is home be it ever so homely." The hole in the ground may do for the fox, the nest may suit the bird, the wigwam may satisfy the Indian, the tent the Arab, the ice house of Greenland may supply the simple wants of the esquimaux, the hotentot may sleep serenely among the branches of a tree, but man, civilized man in the United States of America in the State of Wisconsin aspires to something better. Owing to our financial condition we are not all able to build palaces or even grand houses. Some of us may find it necessary to live for a time at least in houses built of logs or unplained, unpainted boards, but with the loved ones about us and thankful in our bosoms, there we erect our alter. There is our castle, our home, secure as that of any king, which none dare enter unbidden-whatever our habitation, be it of marble, granite, brick or logs we may make it a place of beauty, fresh and glowing all over with brightness and cheerfulness emanating from the refined and cultured taste of the occupants or it may reflect the spirit of such as can see no good in anything more etheral than pork and beans. When I pass a house where the walk from the front gate to the door is bordered with flowering plants and see house plants in the window I involuntarily say to myself "*There* is some soul divinely inspired and akin to the angels, but when I pass a house with the front yard planted to potatoes and cabbage I invariably find culture and refinement lacking in the inhabitants. The influence of the home and its surroundings on the children of the family will cling to them through life and in a great measure effect their well being. How important then it is that those influences should be such as tend to refine, elevate and enoble the mind bringing it into harmonious relations with what is beautiful and lovely.

It is pleasant to note all plants, from the rush to the spreading cedar. From the giant king of palms to the lichen that straineth its stem. There are few who are totally insensible to the changes which are so full of beauty and interest, that take place from the time when the buds expand until the bright foilage falls brown and withered before the icy breath of winter, but few, too few have an awakening to the succession of varied and beautiful forms which year after year adorn our fields and woods, too few of those who have ample leisure and opportunity, know even by sight, much less by name, our most common wild and domestic flowers, yet there is not one that does not exhibit perfection and beauty of structure that tells of its Divine Creator. By domestic flower culture we mean the endeavor to grow rare and ornamental varieties of flowering and other plants in every available situation connected with our homes, be it window-recesses, balcony, staircase, porch or garden it matters not, provided there is sufficient exposure to light and sunshine. Some such place is at the disposal of *almost* every one who enjoys the shelter of a roof, whether he is the inhabitant of the country or the crowded city, the tenant of a single apartment or the proprietor of a lordly mansion. The culture just alluded to forms one of the most delightful recreations in which the enlightened mind can engage, it is innocent and cheerful, can be cheaply obtained, and like other reasonable pastimes may lead to pursuits of a more financially profitable nature. The beauty and variety of flowers, the fragrance and freshness which we are insensibly led to associate with them, have long been themes for the poet and naturalist, but really not so much so as the subject deserves. The endless forms in which plants appear, their adaptations to certain situations, the peculiar properties which many species possess though all grow on the same soil and in the same heat and moisture, the wonderful metamorphoses which they undergo from seed to plant, and from plant and flower to seed again, not to speak of the amenity and beauty with which they invest the landscape, or the utility they confer as articles of food, medicine and clothing, are all subjects of never failing interest to a reflective mind. Nothing perhaps astonishes us more, when commencing the study and care of plants than the immense varieties of kinds or species, as they are botanically called. Interest succeeds astonishment and we find a new source of pleasure which gives not only pure and healthy thoughts to the mind, but health to the body by affording inducements to exercise; and adding to the latter that excitement which gives it a tenfold value. The Almighty Maker has throughout, discriminated each from each, by strokes and touches of his hand, with so much art diversified, that two were never found of exact similitude. But every one has not the opportunity of enjoying this contemplation in the field, and even if he had, the produce of one climate differs so widely from that of another, that his own vicinity would furnish him with very few of the vegetable families. Knowledge has overcome this difficulty, for, by the aid of the sheltered garden, the conservatory, and hot house, the genera of any country can be brought within the compass of a few superficial acres. What can be accomplished by the scientific gardener may be imitated on a small scale by domestic culture, and with comparatively less expense, as our apartments yield that shelter and temperature which it costs the gardener so much to obtain.

The individual who can rear in his window recess, in his lobby or around his porch, the shrubs and flowers of other lands, has always a subject of contemplation before him; something to engage the attention, and to preserve the mind from the listlessness of ennui or from positively promiscuous pursuits. Any member of a family who has a little stand of plants to water, to clean and prune, has always a pleasant daily recreation before him, his love and care increases with these objects, the simple duty becomes necessary to his existence, and he has what so many are miserable for want of, someting to occupy hours of loneliness or leisure. Again plants are objects of beauty and ornament. Why is yonder lowly cottage more lovely and inviting than the large farmhouse on the other side of the river? Simply because its walls are trellised with the rose passaflora and honeysuckle. and its balcony with the clambering hop, whose dark green contrasts so finely with the white-washed front; while the latter is as cold and uninviting as bare stone walls can make it. So it is with any apartment, however humble. The little stand of flowers in the window recess with their green leaves and brilliant blossoms. adds a charm and freshness to the place; and we will answer for it, that wherever these are nicely and neatly kept, the furniture though mean. will be clean and tastily arranged. The individual who prides himself on the favorite plants that blossom on his windowsill, will see that that window be in such order as shall show them off to advantage; and the taste that leads to the establishment of neatness in one corner, will not be long in spreading to the most secret nook of the apartment. Moreover, the individual who cherishes his little array of flowers in his window will often repair to the hills and river sides in search of new favorites; he will insensibly acquire a love of nature and find his enjoyment in studying her mysteries and admiring her beauties, whether in garden, field or forest, instead of spending his time in the haunts of idleness and dissipation. I never hear a man, woman or child scorning nature's beauties be they the smallest flowers or the sweet wild rose or see then ignoring a lovely land-scape without involuntarily ranking them among the heartless, sordid or coarse.

Ferns and mosses are beautiful and will grow in shady nooks where blooming plants do not thrive. Lichens, a race of tiny plants though very common, are but little known to the world, though possessed of a beauty by no means inferior to that of gorgeous flowers or lofty trees. Man is but apt to admire the boundless wealth and beauty of our great mother, nature, only where gigantic proportions arrest his attention, or when the storm of enraged elements makes him aware of his own insignificance. "Sure his head was not set on high that he might despise low things." The trees themselves are so numerous, beautiful and grand, that I cannot even mention the different families to say nothing of the species, for the oak family alone includes 265 species, mostly forest trees of great size. The indoor cultivation of plants is also intimately connected with the sanitary conditions of our dwellings. The oxygen of the atmosphere is indispensible, to the respiration of animals it purifies their blood, and affords them internal heat; and united with certain elements, it is exhaled in the form of carbonic-acid gas, a compound of oxygen and carbon. This gas which is deleterious to animal life, constitutes the main nourishment of plants which absorb it, appropriates its carbon, and restores its oxygen to the atmosphere, again to be breathed in purity by men and animals. It is true that pure air is necessary alike to the life of plants and animals; but the amount of oxygen absorbed by the former is by no means equal to that which they restore and thus through their agency the atmosphere is kept in healthy equilibrium. It was long thought that plants absorbed carbonic acid during the day only, and under the influence of light and that it was given off by them during the nig t, thus vitiating the air in apartments in which they were kept; but this is now decided to be an error. It is confidently asserted that carbonic acid is never disengaged by them during the healthy condition of the leaf, and that the fluid which they so abundantly exhale is pure water. If this be the case growing plants can under no condition, impair the purity of the atmosphere but rather the reverse.

If there are any who think the study and care of plants and flowers is a matter of too little importance as to be beneath their attention, who say it may do for women and girls to putter over, but it is too small business for men, I would ask them who made the flowers. If it was not too small business for God to make them, are they too insignificant for you to tend and study their wants, their structure, manner of growth and developement? *Brute* force no longer rules the world. Hercules may once have been a god when muscular power was considered man's highest attribute, but slowly and surely as the ages roll by, a higher development of the human race manifests itself, step by step along the pathway of knowledge till at present the school-boy knows more about the laws of gravitation than Newton, and he will assert without fear of a dungeon that the world is round and turns on its axis. Henceforth mind is to be the ruling element in the world's affairs. Intelligence will guide the actions of mankind, knowledge will disipate the clouds of superstition and bigotry. The study of nature's work will open up to us such an understanding of the relations existing between ourselves and the world in which we live, that we shall no longer feel like sojourners in a strange country, unmindful of the countless blessings poured out upon us and longing for a brighter, happier home, but with grateful hearts accept the good our Father gives us. In speaking of the adorment of the home we must bear in mind that inanimate objects though very beautiful are not sufficient to render home happy. No man should consider his home fully adorned without a wife, and a woman liberally educated makes the best wife.

The heart to appreciate the lovely must be loving and lovable. The joy given us by the care bestowed on the home is only complete when it finds an echo in the hearts of those whom we hold most dear, therefore women and children, whose husbands and fathers, ignore or disapprove (of their wasting their time and spare money on such useless things) can never find the real pleasure in their little corner of heavenly beauties, that would be theirs provided all husbands appreciated the refining influence on the minds and hearts of the innocent children, and the care freeing rest to tired women to be found in a pretty shady yard where the eyes can rest on the cultivated lawns and gardens in and about their homes. There is no purer, sweeter adornment than roses, lillies (fair flowers of peace), carnations, all the varied multitude of God's dear children, down to the meek-eyed pansies and narsisus which Shelly has called the "fairest among them all, who gaze on their eyes in the stream's recess till they die of their own dear loveliness." Again I say, cultivate them, care for them, love them. Emblems of resurrection, emblems of coronation, sweet incense, breathing harbingers of peace, bringing solace to the sorrow stricken whose hearts are aching for their loved and lost ones. Why my friend there is no place, no spot in life where the dear ennobling influence of flowers may not be felt. I do not wonder that heaven is always represented as a place where the flowers ever bloom, where the roses never fade. Therefore let us fill our earthly heavens, our homes, not only with the beautiful flowers dropped to earth by angel hands, but with the immortals of love, patience and tenderness.

THE GARDEN OF THE VILLAGER AND FRUIT GROWER.

By D. C. CONVERSE, Ft. Atkinson.

One warm day this month two neighbors sat in the shade discussing how best to improve their places.

Said Mr. A. "Now that we have completed our houses let us do a little planning for our gardens. I consider the garden one of the most useful and profitable parts of a home."

"Yes," said Mr. B. "I agree with you there. I remember, when I was a boy at home, the fine garden we had, vegetables and fruits of all kinds in their season. There was a constant draught on the garden from the time the asparagus, lettuce and radishes were ready, until late in the fall. Often the table was supplied three times a day, and I tell you, A, that it saved mother a deal of hard work cooking over a hot stove. And the fact is that during the warm weather we did not crave the heavier foods, having plenty of fruit. But I have been careless about the matter and eased myself by saying that I can buy these things more cheaply than I can raise them. The result has been that we have been largely without. But now I am going in for a first class garden of vegetables and fruit."

A. "How have you planned to arrange your garden and what shall you plant in the fruit line?"

B. "I shall plant in rows so as to cultivate one way with the horse. Starting on the north side I shall plant a row of grapes of such kind as Moore's Early, Worden, Concord, Brighton and for white ones perhaps a few Niagara. Next to the row of grapes will come a row of gooseberries and currants."

A. "What varieties will you plant?"

B. "Of gooseberries, Downing and Houghton, and of currants, Red Dutch, Victoria and White grape; so as to have a variety for canning and for jelly. Next will come a row of blackberries, partly of Snyder for early, and Stone's Hardy or Ancient Briton for late. Then we shall need a row of red raspberries and one of blackcaps. On the remainder I shall put in two or three rows of strawberries and my vegetables."

A. " I understand your plan. You will have those kinds that will be left for a term of years by themselves, where they will not interfere with the cultivation of the rest of the garden."

B. " Yes and by having the strawberries on the vegetable side, they can be plowed up every year or two and thus rotate with the vegetables."

A. " What do you think of planting for ornamentals?"

B. " Well we shall plant a few choice shrubs, vines and trees but the selection will be left largely to my wife. She not only has better taste in that line than I have, but she is the one that will be at home the most and therefore should select such as she prefers."

A. " By the way, I hear that friend C has sold his farm and is going into the fruit business, and judging by the success he had farming, I think he will make a grand success in fruit-growing."

B. " Why so?"

A. " Because he cultivated well and would grow nothing but the very best of everything both in stock and grain. He always said that the expense of growing poor products and scrub stock was as great as growing first class ones. But here comes C now.

" Mr. C we have just been planning our gardens and perhaps, as you are embarking in the fruit business, you can give us some good ideas."

C. " Well I have been studying this matter for some time and shall probably plant about fifteen acres of fruit, this fall and next spring."

B. " What! you say that you shall plant some in the fall?"

C. " Yes, you see that if all the work is left until spring, it will be almost impossible to get it done in proper season."

B. " What kinds of fruit is it safe to plant in the fall?"

C. " Currants, gooseberries, red raspberries, black-berries and grapes."

A. " What distance apart shall you plant?"

C. " I shall plant the currants, gooseberries and red raspberries about 5 by 5 feet; the blackberries 7 by 4½ ft, and black raspber ries 6 by 4 ft."

B " Can they not be planted nearer?"

C. "The distance given for blackberries and raspberries differs from what is generally recommended, but I am convinced that by a little forethought these fruits can be planted so as to cultivate both ways and thus save a large unnecessary expense. Why, just the other day I was visiting a fruit farm and found four men bent nearly double hoeing black raspberries, while three horses stood in the barn doing nothing. On the same farm were red raspberries, currants and gooseberries rowed both ways and not a hoe had been used in them up to the 13th of June. If I get the work planned for fall done, there will be only the strawberries and blackcaps to be planted in the spring."

A. "What price do you expect to pay for your plants?"

C. "I find the different kinds that I have mentioned, quoted at prices ranging from almost nothing up to what seems very high. But my experience on the farm convinces me that a really good article has intrinsic value and a poor one is dear at any price. I go into the business for a life work, putting in the use of land, time, money and patience, and if thrifty, strong, healthy stock can be had, I had better pay $100 per acre than to take poor stock for nothing."

Now my friends I ask you, isn't this man bound to have success? He plants the best stock, does his work at the proper time, and substitutes where possible horse labor for man labor. In short, tries to secure the greatest yield at the least possible expense, knowing that he must not only compete with home growers, but with growers from 150 to 300 miles distant. Therefore I believe that the great problem for the Wisconsin fruit-grower to solve is along the line of cheaper production.

INFLUENCE UPON MORALS FROM THE STUDY OF NATURE.

By MISS MARY CONWAY, Kilbourn City.

Next to spoken words, signs and writing are used as a means of communicating thought. History proves that even before the invention of writing, men were instinctively led to clothe their knowledge in the garb of figurative representations. It was the pride and boast of Egypt, the birthplace of ancient learning, to convey truth by hieroglyphics.

To the eyes of mind turned to this thought, the whole world appears filled with innumerable symbolical figures — hieroglyphics — expressive of moral truth. How true it is that "To him who in the love of nature holds communion with her invisible forms, she speaks a various language."

To understand this language ought to become the object of our most sublime contemplation. We have merely to let the manifold objects of the universe pass before us in review and to note rapidly the flashes of light reflecting the moral truths presented by nature. Neither labor nor study is required in the conception of these truths — the simplest comparison makes it evident. So viewed, all nature, inanimate as well as animate, speaks to the heart and becomes a teacher, as we read in the book of Job: "Ask the beasts, and they shall teach thee; and the birds of the air, and they shall tell thee; speak to the earth and it shall answer thee and the fishes of the sea shall tell." So for us all nature may become a guide conducting us to infinite truth.

It is true that nature's teachings have a moral value. While judgment, conscience, and will must be trained in order that we have a moral character, yet, 'tis the imagination more than any other faculty that breaks down one's limitations, that enables one to realize himself, to realize all his possibilities; it is the imagination only that enables him to form high ideals of moral excellence. All nature appeals to imagination.

Take a person of good intellectual ability who must make a living. At his work he spends ten hours a day, six days in the week, year in and year out. What effect must this have upon his character? What might a few moments daily given to the study of nature do to counteract this narrowing and dwarfing process?

Morality is the harmony between the divine and human in man; it is the good worked out in our lives. Then nature must be a moral educator of great power, for in nature whatever discords or conflicts there may be, harmony is always restored, justice always satisfied.

To create in our youth a quick sensibility to the beauties of nature is to lead them into a light of the knowledge of conditions that establish a nearer relation between God and man. A love for nature is directly opposed to selfishness — that most relentless foe to Christianity. The pure contemplation of nature requires a complete forgetting of self — it is a feeling akin to divine joy. It awakens in a greater or less degree the emotions that have inspired the musician, poet, sculptor and the normal man not the abnormal drudge and vagabond.

The way to expel what is wrong is to fill the soul with the beauty of what is right. The lower things loose their power when the love of the higher is awakened in its true life. Almost every poet, since the first versifier has sung the praise of flowers. Such is their influence that a love and care for them is a sure indication of goodness. So closely do the flowers and kindred features of nature effect the morals, that the flowers, grassy plots, trees, etc., of our homes, indicate contentment and peace as surely as their absence indicates lack of these virtues.

We should inspire a condition under which flowers and trees are themselves beheld and beloved with a half-worshipping delight — always noble and healthful. Man should display as much pride and zeal in cultivating a flower-garden and in the maturing of fruits as he does in the conduct of his business and the success of his commercial enterprises, for without cultivation, the most beautiful scenery of naure is in a degree destitute of that loveliness and grace which are imparted to it by the efforts of human industry.

What was formerly the charming scenery of most of the world — nothing but a waste. But when man with his untiring energy and patient industry set to work, the wilderness was changed into a garden. We may say that God has so disposed nature as to awaken the industry of man, who can by assiduous labor remove the vail that may conceal the utility and beauty of the earth.

If man, through indolence and laziness, refuses to obey the sentence of his Creator, he is unworthy of gazing on the beauty of nature and deserves to live in the desert of thistles and thorns.

All study of nature can have but a common aim to educate man to a better understanding and more perfect love of the Creator.

There is an elevating inspiration and lessons most forcible and lasting in watching the development of vegetable life. As the works of nature, which seem endorsed with life, unfold their beauties and undergo a process of development while we watch them, the Providence of God is more clearly made manifest and we are led to comprehend the mystery, granduer, and perfection of His great universe; we are led into a light that purifies, exalts and ennobles moral character.

THE DROUTH.

BY A. W. WINSLOW, Appleton.

The question: How shall the fruit grower successfully guard against a drouth such as we have had this spring? is one that has beat me thus far, and I know of plenty more that it has beat just as badly. I do not stand here expecting to tell you how to do it. I have not yet learned to do but very little towards guarding against it. I will first say that since the 14th day of April until the 16th of June, we did not have rain enough to wet the ground down one inch. Once in that time there was enough to make the ground moist down about one inch, but it was all dry again before the next day. There was something over eight weeks and the last part of the time it was excessively hot, the thermometer saying 95° to 105° in the shade; and all this time without rain. How shall we guard against such a time as that and still secure a good crop of small fruit? Can it be done? If it can, I think it must be done by irrigation, but not one in one hundred are situated so we can irrigate to do any good, so there is no use of mentioning that. It is beyond our reach. Is there anything in the way of chemical fertilization which we can use that will do any good? If so, what are they? For one I have not tried them and do not know.

Now, a few words about my strawberries. I have got a bed of about one and one-half acres, which is made up of Cresents, Wilsons, Parry, Warfield No. 1 and 2, Gandy's Prize, Bubah No. 5, Sharpless, Manchester, Jessie, Cloud, Crimson Cluster, and one or two others, but they have all been pretty badly scalded and I am not looking for much of a crop. But of course it depends something on the rain in the rest of the time. They are ripening now. The bed is so much covered with the plants that there is no room to cultivate, and to keep it free from weeds. We have to pull the weeds by hand, and I have no water to use.

How shall I guard against the drouth in such a way as to get a good crop such a season as this? I do not know. Is there any one here that can tell me? My raspberries are looking fairly well, and I am hoping for a fair crop. And if I get it, it will be because it has been so that I could cultivate the ground between the rows. And in that way helped to retain the moisture that was in the ground in the spring. They are now in the last half of the blossoming, and as we have had a good rain, I hope for a good crop of berries.

Now, is there anything to be learned from such a season as this has been? Sometimes we can get the best kind of a lesson from our poorest seasons.

I think the lesson that I got is to commence early in the spring, and with plenty of help, in the way of team work, make the ground fine and mellow for all the crops you expect to plant. And then *keep* it so! And then if it comes dry it is in the best possible shape to do its best. Not only with berries but other garden crops. If the soil is fine plants will be more likely to live when set out. And it will be so much less work to keep the weeds out. And by the way, the best time to kill a weed is just before it shows its self above the ground.

I think the only thing I can do to guard against the drouth in a season like this, is to cultivate the ground often and with a fine tooth cultivator. Now this will not do for the strawberries that we are to pick this summer. And I want to know how to care for the bed that we are to pick the stawberries from this summer.

Thanking you for your attention, I will not take the time of the meeting any longer.

FERNS OF THE DELLS.

BY CHAS. N. CHANTER, Kilbourn City.

During the last three years I have been traveling through the states of Indiana, Illinois and Wisconsin, in search of a suitable locality, within 200 miles of Chicago, for the study and culture of all the ferns and wild flowers of great America; but could find no satisfaction until chance brought me to the beautiful dells of the Wisconsin, where, without the least hesitation, I decided to stop, and make Kilbourn City my home. Ah! Kilbourn! God has endowed you with a bountiful supply of Nature's gifts! Such grand scenery in so small a space, is not to be found in any other state. Where can you duplicate Stand Rock, Dining Hall, Witches Gulch, Cold Water Canon, Artists' Glen, Taylor's Glen, Congress Hall, Stoney or Rocky Arbor, and other natural formations too numerous to mention.

The place is a paradise for artists of every study. What a field for the botanist! particularly the cryptogramist, as nearly all the ferns of America can be found here. Within a mile of the town there are at least thirty-two distinct species with their endless varieties.

See the Osmundas, Regalis, Interrupta and Cinnemomea. The name Osmunda originates from the fact, that the boatman Osmund saved a king's life by concealing him on an island covered with this fern; hence the name King Osmund; but more commonly known as the Royal Flowering Fern. The spores of this particular fern being on the tip of the frond.

Clayton, the botanist, when passing through this country, discovered another Osmunda; but the seed was placed near the middle of the frond, which gave it the appearance of a withered center, and was called interrupta; later on a still more beautiful species was found, which throws up its fertile frond separately, resembling a stick of cinnamon, and was consequently named cinnamomea. The sterile fronds of these two Osmundas so closely resemble each other that it is very difficult to tell one from the other, and as the fertile fronds perish before the barren or sterile leaves mature, it is only the practiced eye that can tell them.

Come with me to the nearest wood. Now what do we find with the Osmundas? Two ashyrinnes or lady ferns; beautiful maiden hair (adiaretum pedatum); lastreas (ditatata, or spenulosa.)

The stately botrychurn, the ostrich feather (struthiopteris germanicum), the bold eagle wing pteris, aquilina and the downey asplenium thelyptioides. On the shadowed rocks sastreas (appine) and (marginale), cystopteris bulbipera and fragelis. The delicate and verdant oak fern with its sister the beech fern, polypodiums dryapteris and phegopleris, and the most delicate of them all pallæa gracilis. Now we come to the more open rocks and find pellæa akropurpurea the little rock brake, numerous patches of the evergreen polypodium vulgare. Modest like maiden hair splemwort, asplenium trichoneanes. The woodsias, an occasional fragrant fern (laspea fragrans), and you may find the walking leaf (camptosoms rhiyophylla). In the marsh below see laspeas crestata, the thelypteris and marsh fern. Onoclea senibelis, the sensitive fern, and in the meadow close by may be found the unpretentious little adder's tongue (ophis glossum vulgare), and perchance brotrychime lunarioides.

To collect ferns for a rockery you will require strong implements. Some of the roots can be taken up with the hand, while others, like the osmundas, require a hatchet. Very few farmers will object to your removing ferns, as they look upon them as brakes, which Shakespeare says, is "hateful to crooked ploughs."

All these beautiful ferns can be cultivated without much difficulty in one of our numerous cañons and with the assistance of glass, which might be made — invisible by suspending the orchids and air plants — most of the exotic ferns could be introduced, and the lovely tree ferns dickoneas, alsophyllas cytheas mingled with the superb todeas with their filmy foliage could be grown to perfection. As the exotics require warmth they should be grown near the Devil's Jug. (The name of a cañon of the Dells. — ED.)

Fronds for dried specimens could be gathered into any old book and transferred as soon as possible to drying paper (as they quickly damp off and change color), and these are placed under pressure. Most of the ferns have their seeds or spone cases at the back of the frond, and should be obtained if possible before the elastic ring holding the cases bursts.

Having visited (while an officer in Her Majesty's navy), many parts of the world and a great many of the islands in the Pacific and Atlantic, and always spent the best of my time fern collecting, I ought to know pretty well how the exotic ferns should be treated, hence my excuse for my ambition to see in the Dells of Wisconsin, the prettiest botanical garden in this state, where the Chicagoans with their numerous visitors will be glad to cool off after the excitement of the World's Fair, and double the assets of the accommodating Milwaukee and St. Paul line.

It will afford me great pleasure to add the names of any Kilbourn friends or visitors to the Agassiz association and to assist me in my endeavors to improve a portion of the Dells by sending me their botanical collections from any part of the states, and to visit us ocasionally and see how their specimens have been cared for.

WEDNESDAY *A. M.*, June 24.

Called to order by President M. A. Thayer, at 8:30 A. M.

Questions from the local society were the first topics for discussion.

Q. What kind of raspberries are the most profitable to raise for market?

L. G. KELLOGG — Marlborough, on sandy soil.

GEO. J. KELLOGG — Cuthbert and Turner.

M. A. THAYER — Marlborough and Cuthbert.

L. G. KELLOGG — Black raspberry needs succession, Gregg, Souhegan and Ohio. The Nemaha is similar to the Gregg. I would recommend for the best variety for the garden, the Gregg.

J. S. HARRIS — The Ohio.

M. A. THAYER — For general use the Ohio will grow more rankly and stand more abuse than any other variety. I lose a large proportion of the Gregg in transplanting from one portion of my garden to the other.

A committee appointed by the chair to examine and award premiums on the different varieties of strawberries on exhibition submitted the following:

REPORT.

To the President and Members of the Wisconsin State Horticultural Society: Your Committee on Premiums would respectfully commend the magnificent display of seedling strawberries made by Mr. Loudon of Janesville, believing them to be the finest collection of seedling strawberries ever made in this state. We believe, from the specimens shown, that many of them possess valuable qualities for size, quality, color, flavor, and firmness, and especial mention is made for seedlings Nos. 25, 47, 29 and No. 1. We would respectfully recommend that the society award a special premium of five dollars to Mr. Loudon for his energy and perseverance in bringing before the public these new varieties.

We make especial mention also of two promising seedling strawberries exhibited by P. Crosby of Clinton, and your committee recommend a premium of two dollars to him for the exhibit.

Exhibits of strawberries were made from the three Experimental Stations, viz.: Sparta, Ithaca and Weyauwega; taking the unfavorable season into consideration, your committee consider the exibit a very creditable one, and indicates that much care is being taken in the cultivation of these new varieties. Your committee find on the table of Geo. J. Kellogg exhibits of Lady Rusk, Parker Earle and Gandy, on President Thayer's table Michel's Early, and by C. Herwig the Cumberland, for which no premiums were offered, and we recommend that the foregoing varieties be added to the list for premiums next year.

We have made the following awards:

Best and largest display of strawberries:	
Geo. J. Kellogg, first premium	$3 00
Coe and Converse, second	1 50
Best quart strawberries, Crescent.	
M. A. Thayer, first premium	1 00
L. G. Kellogg, second	50
Best quart Warfield:	
M. A. Thayer, first premium	1 00
G. J. Kellogg, second	50
Best quart Lida:	
G. J. Kellogg, first premium	1 00
Best quart Wilson:	
G. J. Kellogg, first premium	1 00
L. G. Kellogg, second	50
Best quart Crescent:	
C. Herwig, first premium	1 00
M. A. Thayer, second	50

Best quart Bubach:	
Geo. Hanchett and Son, first premium	1 00
G. J. Kellogg, second	50
Best quart May King:	
G. J. Kellogg, first premium	1 00
Coe and Converse, second	50
Best quart Mt. Vernon:	
G. J. Kellogg, first premium	1 00
Best quart Manchester:	
G. J. Kellogg, first premium	1 00
Best quart market berry, quality to rule:	
G. J. Kellogg, first premium	1 00
M. A. Thayer, second	50
Best quart Haviland:	
Geo. Hanchett & Son, first premium	1 00
G. J. Kellogg, second	50

Respectfully submitted,

A. J. PHILLIPS,
A. D. BARNES,
MRS. NELLIE PALMER,
Committee.

Report of committee adopted.

REPORT OF COMMITTEE ON PLANTS AND FLOWERS.

Your committee have made a careful examination of the plants and flowers on exhibition, and have ordered premiums as follows:

Best show of pansies:	
Wm. Toole, Baraboo, first premium	$1 50
Best show cut flowers:	
Wm. Toole, Baraboo, first premium	2 00
Mrs. Florence A. Brinkman, Alma Center, second premium.	1 00
Best show roses:	
Geo. J. Kellogg, Janesville, first premium	1 50
M. A. Thayer, Sparta, second premium	1 00
Best show fringed petunias:	
Wm. Toole, Baraboo, first premium	1 50
Mrs. Metcalf, second premium	1 00
Best collection wild plants:	
C. W. Smith, Kilbourn City, first premium	1 59

Best boquet:	
Lottie M. Rice, Kilbourn City, first premium	50
Mrs. Ramsey, Kilbourn City, second premium	25
Special premiums — Boquet of roses:	
Noyce Smith, Kilbourn City	1 00

Special premium offered by President Thayer of 25 Warfield strawberry plants to any child who would pick and arrange a boquet for exhibition was awarded as follows:

Don M. French, Myrtle Ripley, Sidney Davis, Lynn Pierce, Frank Radant, Guy Van Alstine, Ray McNeel, Maynard Hubbard, Noyce Smith, Anna Dixon, May Metcalfe, Leigh Pierce, Celia McMannan, Frank Nichols, John French, Eolah Ramsey, of Kilbourn; Edna McCormick, Edna Landt, and Clifford Stafford, of Frendship; Edward Oakes, Plainville.

The special premiums — one year's subscription to American Garden, for best pyramid of cut flowers, offered by the secretary, was awarded to Sidney Davis, Kilbourn.

MRS. E. A. HOXIE, Evansville,
MRS. ALICE LLOYD, Chicago,
J. S. HARRIS, Minn.

REPORT OF COMMITTEE ON RESOLUTIONS.

WHEREAS, We earnestly desire the introduction of horticultural education in our common schools as part of the curriculum of study, and to secure this object:

Resolved, That we promise our hearty co-operation with Prof. E. S. Goff and the State Supt. of Public Instruction in preparing text books and introducing the study of horticultural art in our system of popular instruction.

Resolved, That the work of our society in maintaining Trial Stations promises to be of great importance to our State in the near future, and it is only justice to our people that the voluntary work of our society be supplemented by the more efficient support of our law makers.

Resolved, That we look with especial pride upon the work of Prof. Goff through the Agricultural Experimental Station, and in behalf of the U. S. Dept. of Agriculture in the use of insecticides and fungicides as of vital interest to our entire people.

Resolved, That we appreciate the valuable aid rendered us by the editor of the *Kilbourn City Mirror* through the columns of his paper in behalf of this convention, and hereby tender to him our sincere thanks. We also recognize in the presence of the editor of *The Wisconsin Farmer* and the representatives of *The Farmer's Review*, the *Farm*, *Field and Stockman* and

The Prairie Farmer the countenance and support of these valuable agricultural journals and consider them deserving of our commendation and support. We also extend thanks to all State papers that published our programs.

Resolved, That the thanks of the Wisconsin State Horticultural Society are due and are hereby tendered to Rev. L. H. Brown and S. Brown, acting as committee of entertainment on behalf of the local Horticultural Society, and to the citizens of Kilbourn for their royal entertainment during this meeting.

Resolved, That we express our appreciation of the music furnished for our entertainment during the convention.

A. J. PHILLIPS,
A. D. BARNES,
Committee.

NEW VARIETIES OF STRAWBERRIES.

BY GEO. J. KELLOGG, Janesville, Wis.

Mr. President, Ladies and Gentlemen, Boys and Girls, and my Fellow Horticulturists: The question of new fruits is a matter of dollars and cents, success or failure, and nine times out of ten failure. Why? Because of the inate disposition of "all men" to be "liars." The mantle of charity is very broad and sometimes very thin, and in stretching it over so wide an extent of country it is utterly ruined by the rents so often made. Eighteen hundred and ninety boomed the "Michel's Early" strawberry. Parties even contended for the name. No need of any further contest — it will quickly pass to oblivion. It has three good points, vigor, health and pollen. It is a miserable color, small, not even early, leaves the hull on the vine, poor quality, and will not produce fifty bushels per acre in matted rows. Last season it bore better on new plantings, and showed more good points than this year. It is worthless; let it die and those who lie about it.

Parker Earle (H) late. Shows the most fruit of any perfect flowering kind we ever saw. The leaf is affected by a slight disposition of mildew; whether it may injure the ripening of the crop is at this time uncertain. I estimate the crop at the rate of 350 to 400 bushels per acre.

Sadie (p) medium early. Small size, rather soft, exceeds anything I ever saw for quality. From 100 square feet of matted row, June 23, second picking, fifteen quarts, or at the rate of 7,534 quarts of fruit at one picking, per acre. Estimating this as one-fifth the crop, it would yield at the rate of over 1,000 bushels per acre in one season.

Thompson's No. 7. (p) medium early. Very much in appearance like Warfield, though not as firm. From six feet square, second picking, June 23d, four and one-half quarts, or at the rate of 5,445 quarts per acre at one picking.

Sandoval (or Warfield No. 1) (H). Vigorous, healthy, late, medium size, dark color, not as handsome or productive as No. 2. Estimated yield, 175 bushels.

Crawford (H). Vigorous, healthy, very large and reasonably productive.

Mrs. Cleveland (p). Vigorous, healthy, very large and productive.

Eureka (p). Late, first picking uneven, vigorous, healthy, large. Estimated yield, 200 bushels per acre.

Great Pacific (p). Late, vigorous, healthy, firm, large and very promising; first picking June 21st. Estimated yield, 200 bushels.

Stayman's No. 1 (p). Vigorous, healthy, fair size and promising; 200 bushels.

Miami (p). Medium season, fine dark color. Estimated yield, 150 bushels.

Pearl (H). Very promising and will pay.

Burt. We can see no difference between this and Capt. Jack, which is one of the old kinds that yields well, and is firm enough to ship.

Lady Rusk (p). Late, healthy and moderately productive.

Beder Wood (H). August planted, very promising.

Saunders (H). August planted, very promising.

Princess from Minn. (p). Very promising and wonderfully productive.

Tippecanoe (p). Large, only for amateurs, not profitable.

Mt. Holyoke (H). October planted, large, fine and very promising.

Crosby's No. 27 (H). October planted, large, fine and very promising.

Thompson's No. 25 (H). Promising, yet shows some rust.

Thompson's No. 9 (H). Promising, and needs further trial.

Thompson's No. 31 (p). Promising, and shall continue it another year.

Thompson's No. 4, 29 and 30, are worthless. Monmouth, Mammoth, Florence, Hoffman, Viola and Pine Apple, are worthless.

Old standard sorts we rate about in the following order for value: Of perfect flowering kinds: Jessie, Captain Jack, Mt. Vernon, Wilson, May King, Sharpless, Miner and Cumberland. Ontario, which has a little pollen, rather low grower, but one of the most productive of large berries, sometimes yielding 400 bushels.

Of pistillates, Warfield heads the list for profit, good shipper, bright color, early, very vigorous and healthy, more productive than Crescent, better size and quality, and seems to be a general favorite.

Haviland for near market will give more bushels than Warfield. Not as good color, quality, or as firm, it lays all along the rows in heaps and needs a good mulch under it, and will pay big for near market.

Bubach No. 5 is the most profitable large pistillate for near market; rather soft, but the fruit commands the highest price and will please every amateur.

Crescent, the grand old standby, only a few better, perhaps only one;

that is from present appearance, Warfield. If the last is every way better, we have no need of it; but for the present we will recommend it for family use and near market.

Manchester retains a value as a late berry, and is yielding 200 bushels.

Enhance (H) leads the list of the unknown, with all good promises, while Wolverton, Boynton, Walton, Felton, Bessie, Ohio Centennial and a host of others all claim some superior point, even if it should prove humbuggery. There is no way but to try all things and "hold fast to that which is good."

Best three perfect blooming kinds, Jessie, Parker Earle and Sandoval.

Best three pistillates, Warfield, Bubach and Haviland; and if Sadie, Thompson's No. 7, Great Pacific and Eureka continue in well doing, they will demand a front place.

Mr. F. W. Louden's 200 new varieties now in second crop are among the strawberry wonders; he has added 600 new varieties to the list this year, of which he has already selected 126 as worthy of trial; and not content to produce over 300 varieties of choice strawberries, he has now a thousand seedling grapes on trial. See his collection of twenty-five varieties of strawberries on exhibition in this hall and also the two varieties of choice seedlings raised by P. Crosby, of Clinton, Wis., on exhibition.

Moved by A. L. Hatch, that Mr. Kellogg's paper be published in the *Wisconsin Farmer*. Motion prevailed.

MR. PERRIAM — I think if the newspaper fraternity are left to take care of things as they come you will be apt to get it published in a good many papers.

SECRETARY — I think the paper is very valuable; of course when it is published all will know the writer and his location and will take it into consideration. I have been asked the question so many times, "Which is the best variety of strawberry to raise?" and I tell them to read our reports and judge for themselves what kinds will succeed best in their locality and on their soil.

J. S. STICKNEY — I spent a day very pleasantly and profitably at Mr. Kellogg's grounds last week and felt richly repaid for going out there to watch and criticize. We thought it was worth much to the people at large to know the experiments he has been making. For instance, the experiments with Michel's Early, there were two matted rows fifty rods long and they will not produce fifty bushels per acre, the ground gave him, comparatively, nothing, it cost him that much to find out the bearing qualities, but he gives it to you for nothing. I think if the Parker Earle fails in anything it will be in the foliage, for it is necessary to have a fair amount of foliage to properly ripen the berries. I went to Mr. Von Baumbach's grounds and found the Ontario far exceeding anything on Mr. Kellogg's grounds. The average person should not attempt to grow more than five or six varieties, he needs to simplify his list and there is no better way than to get a few plants to experiment on. Visit your neighbors grounds and if you find anything that suits you tie to it and you will soon have the half dozen. We say when we eat the Wilson that we do not want to lose it, it is one of the old stand-bys; with sufficient sugar there is no berry that has so fine a flavor.

Q. Is the Michel's Early and the Michael's Early the same variety?

G. J. **KELLOGG** -- Yes, sir.

Q. Which then is the correct name?

A. Neither, it should be called Humbug. I shall tear mine up this fall, and any man that wants them is welcome to them.

DISCUSSION ON STRAWBERRIES.

A. A. **WINSLOW** — How are we to guard against drought in the bed we are picking this summer?

A. By mulching.

A. A. **WINSLOW** — My bed is a matted bed; how can I do that?

J. S. **STICKNEY** — You do not want a matted bed; you can mulch if kept in rows, pick easier, and it is better in every way; the plants have more room for the roots and you will have stronger plants.

A. A. **WINSLOW** — I cut out with a hoe for the pickers.

J. S. **STICKNEY** — That was a waste of energy, because if the plants had not been allowed to grow you would have had more vigor and a better yield. You will get better results with plants a foot apart in the rows and one and one half feet apart between rows. Mr. Von Baumbach's method gave thorough cultivation in the spring; he went through with a fine tooth cultivator and then mulched with a very coarse mulch that had been used to cover with in the winter; part marsh hay and part straw. We use manure from city stables, part manure and part straw, and let it get about six months old and then apply; it is convenient and after it is applied it is not disturbed by wind.

M. A. **THAYER** — I have tried cornstalks, leaves, anything that has no weed seed, it matters not so it lays there. I once used ensilage from the silo and it worked very well.

SECRETARY — The MS. for our volume has been in the hands of the printers for more than three months. An increased number of Blue books had to be printed that took all of the office force, hence we could not get the volume out in time for this meeting.

Next year our report will no doubt be out on time.

The awarding committee desires to offer the following amendment to their report, that Michel's Early, which they recommended to be added to the list, be stricken out and that, owing to the information which Mr. Kellogg is giving to the public, he be awarded one dollar each on the Gandy, Parker Earle and Lady Rusk, which were recommended to be added to next year's list.

A. J. PHILLIPS,
A. D. BARNES.

DISCUSSION ON STRAWBERRIES RESUMED.

J. S. STICKNEY — I would like to speak of Mr. Baumbach's method; he takes two crops very successfully; he goes over his strawberry beds with a mowing machine and cuts off all foliage close to the ground, draws it off and burns it. He then goes through with a disc cutter and cuts rows eighteen inches wide and cultivates thoroughly, and by that means gets two good crops instead of one; his second crop may vary in size of berries but it does not in quantity of crop.

M. A. THAYER — I have practiced that same method and have found it successful.

J. S. STICKNEY — I think the renewal of all that foliage necessitates the formation of new white roots.

GEO. J. KELLOGG — Although we had considerable discussion on this question yesterday, there is no question of so much importance to this convention, as strawberry culture; I have learned one hundred dollars' worth from the experience of Mr. Baumbach. If you are going to take the mulch off, take it off and cultivate and then return it. I think it best not to remove it.

J. S. STICKNEY — I think if you will take your pencil and figure up you will find it pays in dollars and cents if you remove it.

GEO. ROBBINS — I do not think it pays to take out plants for sale from bearing beds. It is better to set out a bed for plants. If you remove mulch and return it you will have dirty berries, if you leave it on they will be clean.

THE BENEFITS OF PLANTING SMALL FRUITS IN THE FALL.

A. D. BARNES, Waupaca.

Currants, gooseberries, raspberries, blackberries and most especially grapes, which are first. Moving and transporting the plant while it is in a dormant condition when it is at rest, for so soon as it has shed its leaves in the fall it is not endeavoring to progress, and being at its very strongest stage of existence. Knowing that it will stand much more abuse and exposure at this season of existence, than it will in the early spring after sustaining itself and subsisting on its own vitality for the whole of a frigid winter, when it must necessarily be at its weakest point of vitality.

Therefore, I believe this to be the proper season to transplant, besides one generally has more time in the fall than in the spring, and will be quite sure to get the work done in a better condition than in the hurry of the spring. Also believing that it is not right or natural to dig and transport plants and have them out of the ground when they are trying to and ought to be growing, for every hour they are out of the earth at this season is retarding their growth just that much. While in the fall, if the natural moisture is kept in the plant, and it was properly dug, handled, transported and transplanted, it is in just as good condition to grow and thrive in its new, as it was in its old, bed.

It is not my purport to make this argument lengthy, for I believe the most of us can readily conceive the benefits of fall planting, especially all who have had any experience with this season's drouth and wholesale devastation, when almost everything that was planted this spring, unless planted very early, has proved a failure, while on the other hand, almost every plant that was properly planted last fall, has stood the drouth and made a fair growth.

J. S. HARRIS — I think the amateur will have better success by planting out in the fall. The man that only plants a few trees might set out in the fall and box them and they would do well. I set out trees and boxed them and when I removed the boxing in the spring I let the dirt fall down for mulching and did not see any difference between trees that were transplanted and those that had not been.

A. D. BARNES — I believe small fruits are best planted in the fall, but I do not recommend it for trees.

J. S. STICKNEY — It is better for small fruits but I do not think it is best for trees.

A. D. BARNES — I think it far safer to put out currants and gooseberries in the fall than to set them in the spring, because most people neglect them in the spring until it is too late to transplant safely.

C. A. CHANTER — Do you not think trees are put out too late as a general thing? I often see men go by with trees whose foliage is well advanced and those trees usually die the second spring.

J. S. HARRIS — The critical period is the next winter after the tree is planted out, and any device we can get to start early is an advantage.

A. G. TUTTLE — Trees set in the spring are apt to be deferred too long; people want to get through with their seeding before setting them out. The earlier a tree is set in spring the better.

A. D. BARNES — A tree properly set in the fall will do better if there is moisture in the ground than if it is dry.

A. G. Tuttle—The necessary thing is to keep moisture in the trunk of the tree as well as in the root.

J. S. Harris—I would not plant a valuable tree unless I gave it proper protection.

J. Perriam—My experience in tree planting in our cities is, that the critical time is the second season, if it should be a dry one it is more disastrous than the first season; I have had better success in ordering my stock in the fall and heeling it in, because it is the drying out by winter winds that is so disastrous to the life of the tree. By heeling it in you do not dry the roots.

Mr. Lloyd—What is the difference in effect in heeling in and putting out in the winter?

A. D. Barnes—If the tree is properly heeled the limbs are covered.

A. G. Tuttle—There is with me no question about the cause of the failure in putting out our fruit trees. I protected trees with corn stalks and those protected are alive while every single fruit bud not protected was killed.

Geo. J. Kellogg—No currant or gooseberry should be put out in the ll without sufficient moisture about the roots to carry through the winter.

Q. When was the Arbor Day originated?

M. A. Thayer—I think it was originated in Cincinnati. About thirty-six states observe the day.

W. A. Ramsey—Dr. Woolcott of Milwaukee, as early as the year 1856, organized a club of twenty who each set out two trees in the city.

Secretary—Nebraska was the first state to inaugurate Arbor Day for tree planting.

DISCUSSION ON THE USE OF THE SPRAYING PUMP.

Q—How late will spraying do good?

A. L. Hatch—Until the calyx turns down.

Prof. Goff—I think it will do some good even after the calyx has turned down, for moths will lay eggs after it has turned.

[A. L. Hatch exhibited specimens of limbs that had been sprayed and those that had not.]

Prof. Goff—The samples do not do full justice to the effects of the spraying for the leaf roller, the trees would show a very marked effect.

Q—Can fruit trees be sprayed late enough to be advantageous to the fruit-grower and not be a detriment to the bee culturist?

Prof. Goff—That is easily answered, for the fruit trees should not be sprayed at the time when they are in bloom.

B—Is there any good reason for the antagonism existing between the fruit-growers and bee-keepers?

G. J. KELLOGG — No.

PROF. GOFF — With certain kinds of grapes there is reason, for there are some kinds that the bees do injure.

A. L. HATCH — Bees cannot puncture the skin of any kind of grape, they will suck the juice out of a Concord that has had its skin burst. The yellow-jackets sting the grapes and the bees follow them and profit thereby; the yellow-jackets should bear the blame.

A. G. TUTTLE — What is destroying the foliage of the plum trees?

A — Black Aphis.

Q — What is the remedy?

PROF. GOFF — It is now too late to apply successfully any remedy. The trees should have been sprayed with kerosene emulsion before their leaves had expanded.

Q — What extent do they damage the trees?

PROF. GOFF — Very greatly in some instances and they destroy the tree. They injure some trees more than others, and our native trees more than the European.

SECRETARY — Wouldn't you recommend to everybody to spray all trees, in the spring, with Paris Green or London Purple?

PROF. GOFF. — They will not kill many Aphis. The trees should be sprayed with kerosene emulsion just before the buds are bursting, that is the only time I have succeeded in killing the Aphis.

SECRETARY — Prof. Cook recommends spraying every tree.

A. G. TUTTLE — This is not the ordinary plant louse, it is something new. I have been raising fruit a good many years and I have never seen anything like it before. It is stripping the trees in my neighborhood as fast and as thoroughly as the canker worm ever did. They commence on the lower limbs and work up. I do not think there will be any foliage left on the trees in a week.

PROF. GOFF — Prof. Riley's formula for a kerosene emulsion is one pound of whale oil soap, two gallons of kerosene and four gallons of water.

A. L. HATCH — Heating the soap makes a perfect emulsion.

PROF. GOFF -- I have found difficulty in keeping the emulsion perfectly mixed. I have fixed a pump that will pump a stream of water and a stream of kerosene at the same time. I have been experimenting by mixing kerosene and water and dispensing with the soap.

Q. What is the best remedy for the gooseberry worm, the currant worm and the apple caterpillar?

A. Hellebore for the currant and gooseberry worm and Paris Green or London Purple for the caterpillar.

PROF. COLEMAN — I find that the sparrows are taking the currant worm.

Q. How late can you apply hellebore to the currant bushes and be safe from danger of poisoning the fruit?

Last year there were no worms on my bushes but this year they are loaded with them. They did not appear until the currants got very large.

I find the worms where the sunlight strikes the bushes but not where the foliage is thick.

A.— Hellebore is only poisonous to insect life and no injurious effects will result from using it upon the bushes at any time.

Q.— What is the cause of the apple blight?

PROF. GOFF — The first cause: it is a fungus disease due to bacteria, there are other conditions that affect the disease and are often called the cause. The remedy is to cut off the blighted limb three or four inches below the blighted part, it will arrest but not stop further blight; the limb is dead as far as the blight extends.

A. L. HATCH — I had a number of trees that blighted: several varieties of crabs and the Alexander. I cut out the blighted trees and burned them. I think it is the better way to burn up and put in varieties that are not addicted to the blight.

Q.— What ails the apple trees around here: they blight and turn black and the leaves die. It seeems to be a sticky substance.

PROF. GOFF — It is the blight.

Q.— What would you do with the currant borer?

PROF. GOFF — My way is to attack them before the leaves open, then I can tell the infected canes and cut them out.

Q.— How can you tell the infected part?

A.— The foliage looks more feeble.

A. D. BARNES — Prof. Goff, did you ever notice the apple blight traveling in the direction of certain winds? I found, in my orchard, after muggy weather, the blight traveling with the wind to the west but I never knew it to travel to the east.

PROF. GOFF — I have frequently seen the statement that such is the case, and the southeast wind being unusually warm would favor the spread of the disease.

A. D. BARNES — Could this be prevented by having wind breaks in our orchards?

A — No, sir.

A. G. TUTTLE — I have found that orchards protected on the west and south blighted to nearly ruin the orchard. The first fifteen years I lived in Wisconsin, I knew of no case of the blight. The first variety of apple I knew to be affected was the Tallman Sweet. Now it is taking other varieties. It was not formerly believed that the Fameuse would blight, but now they are blighting as badly as any variety. All agree that it is something they do not know anything about; one year it is on one tree and the next year on another.

Q. What is the best remedy for orange rust?

PROF. GOFF — I know of no other way than to cut it off and burn it.

M. A. THAYER — Is there any remedy for the blight on the blackberry? It took off most of the lower foliage.

A. L. HATCH—Prof. Goff and myself sprayed for it but failed. I think however, that we shall find a remedy.

A. G. TUTTLE--Can any one describe the apple curculio?

A. It resembles the plum curculio.

J. S. HARRIS—It is a smaller animal and has four lumps on it that the plum curculio does not have.

PROF. COLEMAN—We have a Passion vine that we have put out; it is so large that it fills a window and will make considerable growth; will it do to cut it back in the fall?

C. A. CHANTER--It will do to cut it back a good deal and it will make a new growth where so treated.

Q. How shall we keep the birds out of the cherry trees? I have been recommended to use scare-crows, bits of tin, etc., but they have all proved of no avail.

G. J. KELLOGG—Nothing but netting will prove effectual.

J. S. HARRIS—One of the best things is to have a plenty of June berries that ripen about the same time. The birds like them better and thus save the cherries.

OBSERVATIONS AT WASHINGTON.

A. J. PHILLIPS—Mr. Willetts, of Michigan, is very anxious to have specimens of different kinds of fruit for examination and comparison, from different localities and soils. Mr. Colman first suggested the idea, and Mr. Willetts followed it up, of ascertaining the names of different growers. They formulate a different set of questions for the northwest and for different sections of the country and no two questions are alike. They say interest in fruit growing in the south is largely increasing. With reference to seedling apples, a man is confident he has the best seedling apple that has ever been brought out and he wants to get it before the public, and so people are all the time sending in questions to be answered with regard to their fruit. I was surprised at the interest that has been manifested by these men in the Division of Pomology. Prof. Van Dieman is doing much in that direction. A number of specimens of apples were sent to the department in March, among which was the Northwestern Greening, and while Minnesota men long ago decided that the Malinda apple was of no account as a late keeper, yet the apple that was received in the best condition as late as the 20th of March was the Malinda, and I am getting all the Malinda grafts I can and am top-working them on the Taylor crab.

We see a great deal said in the papers that the agricultural and horticultural division receive more of the appropriation from the Department of Agriculture than they ought to have, that other divisions ought to get more and those divisions are of little benefit to the people, but there are letters on file stating that the introduction of the Naval orange has been of more value to the state of California than all the Department has cost the government. In California there was an insect that was liable to destroy the oranges and the Department found by experimenting with an insect found in Australia that it would destroy the insect in California that was injurious to the oranges, so you see the Department is doing a great work.

PROF. GOFF — I want to endorse all that Mr. Phillips has said, yet for all, there is some cause for dissatisfaction. There was $350,000 appropriated for the purchase of seeds and cions. I asked Mr. Van Dieman for some cions for Wisconsin; he replied that he would be glad to furnish them, but he had no money to do it with. I asked him if there was any way by which I could help him, and he said by writing to Secretary Rusk; I wrote a letter to him, and for fear it might be too impassioned, I submitted it to Prof. Henry, after which it was sent. Secretary Rusk said it was all right and proper, but that every cent of that money is appropriated by congressmen to send seeds to their constituents.

PRES. THAYER — I would like to bring up the subject of the Columbian Exposition; we would like suggestions as to how we can best advance the interests of Wisconsin at the Exposition.

GEO. J. KELLOGG — Unless they make a different classification we will not do anything outside of our own state department. We are not going in for a display of wines and brandies.

MR. PERRIAM — I would simply say that the feeling I have found expressed is, they did not care so much about the chief, that is what state he was a resident of, if he be a good executive man. We always insist from first to last that the classification is a most egregious one.

PRES. THAYER — Mr. Perriam has been of great assistance to us in this work and I regard him as almost one of us in point of interest.

MR. PERRIAM — The secretary of Floral Association sends out to ask for suggestions from the different floral associations and I think there is no doubt that we shall be able to get a re-classification.

A. L. HATCH — Mr. President, I wish to present this resolution:

Resolved, That we protest against the entire application of the congressional appropriation for the distribution of seeds alone, and to the neglect of cions, cuttings and plants in the interest of Pomology.

Adopted.

REPORTS FROM LOCAL SOCIETIES.

EVANSVILLE SOCIETY — PROF. J. E. COLEMAN.

Mr. President — I was elected an officer of our society, and sent as a elegate to your meeting. I like the outlook. We have made our constitution broad enough so that we can work in other lines, although we shall make horticulture the objective point. We are not very numerous, we have only been organized a short time, but I think we shall easily double our membership. I have been very much benefitted by coming here, and feel that I have received ideas I can put in practice when I go home. I hope our society will soon get strong enough to invite you to hold a meeting in Evansville.

SOUTH WAYNE — MRS. HEINDEL.

We organized last spring with fifty-four members; as a rule they are very much interested — one man has laid out a fruit and vegetable garden as recommended by President Thayer, and so I know they are interested. I want to inquire how these new societies are going to interest and keep the young people? Why cannot we have meetings at our homes? What if we do have fifty-four members? I can get supper for fifty; our house is like an omnibus that will always hold one more, and that one is almost always there. We need to do something to interest and keep the young people in these societies. We have girls growing up that will have their living to earn and they had better be earning it by raising strawberries than by teaching school for they are better fitted for it.

GRAND CHUTE SOCIETY — S. S. WINSLOW.

Our custom is to meet once in three months, and we have a picnic dinner. The family, at whose home we have our meeting, furnish coffee, tea, milk and sugar. We also have a farmers' club. In the whole length of time we have been organized we have not missed one meeting, rain or shine. There are always enough present to have a good meeting. Our next meeting is to be held at Mr. Huntley's.

J. S. Stickney — I want to answer briefly our lady friend's question: "how can we interest the young people?" We interest children by pictures, and why will not the same rule hold good in horticulture? Why could we not in these quarterly meetings introduce premiums for something of this kind? It would take executive ability to do it, but I think it could be made successful.

Adjourned.

The following resolutions were unanimously adopted at a special meeting of the Kilbourn City Horticultural Society:

WHEREAS, At the State Horticultural Convention lately held in our place this society was much assisted by citizens in receiving and entertaining the delegates from abroad; therefore,

Resolved, That we hereby extend our thanks to all who thus kindly assisted us.

Resolved, That we are under special obligations to Mr. J. E. Jones for his most excellent address of welcome, thereby reflecting honor, not only upon the society, but upon the village also.

Resolved, That special thanks are due to the Misses Rork, Corning, Weidenbacher, Ahrens and Van Alstine, and Mr. Orin Brown for their generous and excellent entertainment of music during the convention.

Resolved, That the local society of Horticulturists and the citizens of Kilbourn do hereby express their appreciation of the honor conferred by the state society in appointing the summer meeting in this village, and thus bringing to our homes the prominent leaders of one of the most useful branches of the great agricultural universe.

We would also express our appreciation of the many valuable lessons imparted to this community, and feel that we have been unmeasurably benefitted by the work of the convention.

It is also our conviction that the Wisconsin Horticultural Society deserves an equal prominence with other state institutions, and should have a proportionate share of state support.

Resolved, That we thankfully appreciate the generosity of the G. A. R. society in their kindly assistance.

W. A. RAMSEY, *President*.

L. A. BROWN, *Seeretary*.

Much of the success of the convention was due to the indefatigable industry and tireless labors of Mr. J. E. Jones, of the *Mirror-Gazette*, and Rev. L. H. Brown, of the First Baptist church of Kilbourn City, who were the chief executives of the occasion. Their efforts were seconded by nearly every citizen of the place, who felt bound by all the ties of hospitality to entertain their guests with the best the city afforded.

The convention adjourned at 2 o'clock Wednesday afternoon to take a trip up the Dells to the famous canyon and the witch's gulch, two of the most romantic scenes in the Dells region. The owners of the steamers kindly made half rates for members of and visitors at the convention.

The following members and visitors registered at the secretary's table. There were doubtless some who did not register, whose names were not obtained.

D. C. Converse, Ft. Atkinson; Geo. J. Kellogg, Janesville; J. S. Stickney, Wauwautosa; A. D. Barnes, Waupaca; A. J. Phillips, West Salem; Prof. E. S. Goff, Madison; Mr. and Mrs. H. Campbell, Evansville; Mr. and Mrs. B. S. Hoxie, Evansville; Prof. and Mrs. J. Emory, Coleman; Mrs. N. N. Palmer, S. N. Buswell, Amhurst Junction; Hon. and Mrs. J. J. McGillivray, Black River Falls; Mrs. Florence A. Brinkman, Alma Center; Mrs. M. L. Hostrauser, Black River Falls; Geo. H. Robbins, Platteville; Mrs. W. B. Lloyd, Prospect Park, Ill.; Wm. Springer, Fremont; L. J. Kellogg, Ripon; William Toole, Baraboo; William Fox, Baraboo; Chas. Hirschinger, Baraboo; A. L. Hatch and daughter, Ithaca; A. A. Winslow, Appleton; Mrs. L. W. Heindel, South Wayne; John Toole, Baraboo; A. G. Tuttle, Baraboo.

The press was represented by Geo. B. Merrick, of the *Wisconsin Farmer*, H. B. Thurston, *Farmer's Review*, W. B. Lloyd, *Farm, Field, and Stockman*, and Jonathan Perriam, *Prairie Farmer*.

B. S. HOXIE,
Secretary.

TRANSACTIONS OF THE 22D ANNUAL MEETING

OF THE

WISCONSIN STATE HORTICULTURAL SOCIETY.

Held in Madison, February 2-5, 1892.

SENATE CHAMBER, TUESDAY MORNING, February 2.

Convention called to order by Pres. M. A. Thayer.

The following committees were appointed:

On Program — Geo. J. Kellogg, C. A. Hatch, L. G. Kellogg.

Nomenclature — J. C. Plumb, Chas. Hirschinger, Wm. Springer.

Revision of Fruit List — Prof. E. S. Goff, A. L. Hatch, A. J. Phillips.

New Fruits — A. Clark Tuttle, A. J. Phillips, Wm. Springer.

Legislation — B. S. Hoxie, C. E. Tobey, W. S. Braddock.

Finance — Matt. Anderson, J. M. Edwards, Geo. H. Robbins.

Arbor Day — Prof. E. S. Goff, B. S. Hoxie, Vie H. Campbell.

Local Experimental Stations — Prof. E. S. Goff, Prof. W. A. Henry, Geo. J. Kellogg, Wm. Toole, C. H. Hamilton.

Resolutions — J. C. Plumb, F. C. Edwards, Warren Gray.

J. C. Plumb stated that the delegate from the Minnesota society, Mr. Dartt, was present, and moved that he be accepted as such.

Geo. J. Kellogg moved to amend that he be an honorary member for the next year.

Motion carried as amended.

GEO. J. KELLOGG — There are many who would like to see the fruit on exhibition, and I move that some one be appointed to take charge of the fruit room.

Carried, and H. B. Chappel was appointed.

SECRETARY — I find, in looking over our list of honorary members, there are some names that have been continued from year to year, and think they have no especial interest, as I have sent Transactions to them that have been returned to me, the question is shall we continue them longer on our list? Our constitution provides that any person "who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society," may be an honorary life member. For this reason I move that Geo. P. Peffer, J. C. Plumb and Wm. Springer be placed on the list of honorary life members.

Carried.

GEO. J. KELLOGG — We have on our premium list the statement that the awarding committee may give a premium of fifty cents on best single plates of all varieties recommended in the fruit list, page 6 of our last volume, and I want to present this resolution:

Resolved, That the committee on awards at this winter's exhibition be given discretionary power to award premiums on single plates of apples outside the list contained in Vol. 21, the whole amount not to exceed ten dollars. I also move that the following be added to the list: Alden, Pres. Smith, Avista, Fall Sweet, Winter Sweet, Windsor.

J. C. PLUMB — Is that for this exhibition?

A. It is.

J. C. PLUMB — Is this an additional list or what is already on the list?

A. It is for this list, for this meeting.

J. C. PLUMB -- This list is likely to be extended indefinitely, and I would suggest that the committee on revision of premium list come in here to take action on this recommendation.

GEO. J. KELLOGG -- I made this motion for the purpose of encouraging a show of apples. If we pay a premium of one dollar it will make the exhibitor a member.

SECRETARY — Last year I suggested the impropriety of our offering premiums on such a long list of varieties that we could not recommend, and it was voted by the society that the secretary should make out the premium list. I would suggest that the committee be allowed to recommend a discretionary premium to a worthy plate on exhibition; the trouble heretofore with regard to awarding "discretionary" premiums has been the tendency to give the very last plate on exhibition a premium of a dollar even if it was the Little Red Romanite, therefore I would recommend the committee be restricted to ten plates.

CHAS. HIRSCHINGER — I would like to ask if there is anyone here who can tell if Lubusk Queen is worthy of a premium? If there is it will be worth all we pay for it. I ask Mr. Hatch if he knows as to that?

A. L. HATCH — As a variety it is very satisfactory to me.

SECRETARY — I move that our committee on awards of premiums at this show of fruit be restricted to ten varieties.

A. L. HATCH — A better disposition would be that the president and secretary, knowing the finances of the society, should consider those premiums as discretionary.

Motion prevailed.

SECRETARY — If we do not choose to take up the question of apples this morning, there is considerable matter on my table that could be profitably considered, and if there is no objection I would like to take it up at this time.

DEPARTMENT OF POMOLOGY — COLUMBIAN EXPOSITION.

I wrote to the State Executive Committee of the Columbian Exposition with regard to what funds belonged to us as a society; that we could make a better showing if we knew at the start what sum was set apart for us, than if it was to be doled out to us in the future, and I received the following reply:

JEFFERSON, WIS., January 26, 1892.

B. S. HOXIE, ESQ., Evansville, Wis.:

Dear Sir,— I duly referred your letter of recent date to the State Board at its meeting in Milwaukee last week, and the same was referred back to me, with instructions to confer with the officers of your society, to ascertain what amount of money the society will require from the state appropriations to aid them in making a proper exhibition at the World's Fair, and to ascertain as near as possible in what line the money will be expended. Of course you are aware that our state appropriation is small, and to serve all we must deal small.

Mrs. Winans, a member of the State Board, will address the State Agricultural Society on Wednesday evening, February 3d. Mr. Coburn of our State Board and myself will also be present.

I expect that we will be present in Madison Tuesday, Wednesday and Thursday, the 2d, 3d, and 4th of February. During that time we will be pleased to confer with you on the subject of the Horticultural Exhibit, and the amount of money which you think you will require at our hands.

Yours truly,
R. B. KIRKLAND,
Executive Commissioner.

I hope the members will take this matter into consideration. When I talked with the members of the board they seemed to be inclined to leave the matter very largely with the State Horticultural Society, they are none of them horticulturists. When we sent in our application for space we had not time to communicate with the members of the society or those who had experience at New Orleans. I wrote to Mr. Samuels telling him I had not had time to confer with other members but thought we should require more space than we had at first asked for. I found that other states were asking for more than we had asked for.

J. C. PLUMB — I think we know now nearly what we want.

GEO. J. KELLOGG — I do not think we need to take time for this question until we meet with the board.

J. C. Plumb introduced the Iowa delegates, Chas. G. Patten representing Iowa at large, and B. Ferris a delegate from Iowa State Horticultural Society, and moved they be made annual honorary members. Carried.

SHALL WE CONTINUE TO PLANT SEEDS TO OBTAIN NEW VARIETIES OF APPLES.

BY WM. A. SPRINGR, Fremont.

Mr. President, Ladies and Gentlemen of the Wisconsin State Horticultural Society: The question of planting apple seeds from some of our best sorts in order to obtain standard varieties suitable in all respects for our climate seems to me to require but one answer, and that in the affirmative. It is evident too that seeds shall be taken from our hardiest varieties.

The Duchess is one of these, and seed from it in Waupaca county has given us quite a number of seedlings bearing better fruit than the parent tree. and equally as hardy; in fact so far as tree is concerned they are the Duchess over again. Of nearly a dozen of these only one is as early as the parent, but some are better in quality and the majority are better keepers.

We have also many good seedlings from the Alexander.

John Baxter of Lind, planted seeds of this variety from which he raised some of the finest appearing and largest apples I ever saw. Some of these blighted after a few years and others died after coming of bearing age. One of these, the Logan Sweet, has never blighted, but the Garfield, the largest sweet apple ever grown in Wisconsin, and as highly colored as the Wolf River, has blighted considerable. The Lind is another large red apple of same seed. All of these are excellent quality—much better than the parent.

We think it much the safest plan to plant seeds of large well colored varieties than to chance it on unworthy sorts.

The fact remains though, that we have some very fine fruit from trees whose parentage is of this haphazard way of planting.

Mr. Wrightman, of Weyauwega, in the early *fifties* bought a few green sweet apples, saved and planted all the seeds, and I think his trees cannot be beaten in any orchard of our state. His Wrightman Sweet, Waupaca, Greening, and Blush, are colored much like the parent apple. But his Waupaca, nearly as large as Wolf River, and colored much like it, his Weyauwega, Alden, Martha, Flora, and Pruda, are all well colored and much larger than the parent apple. All of the above named varieties have been propagated and prove to be hardy. He has other trees which bear fine fruit but not desirable to propagate.

Mrs. Albert Smith planted the seeds of one Duchess, from which she obtained four trees, one a little earlier than the Duchess, two early winter, and the other will keep until June. These are all being propagated and are large handsome apples.

I will venture the assertion that there is no county in the state, and it may be no exaggeration to say there is no state in the Union which has produced so many good seedlings as has Wisconsin. We say this of Waupaca county in no boasting spirit, for we often show at our county fair over two hundred varieties of very creditable fruit, and without these seedlings our apple crop would be thin.

In 1884 we selected one hundred and thirty-five varieties for the world's fair at New Orleans. About fifty varieties of these had been grafted. Double this amount could now be presented at a fall exhibit. It will be remembered that the New Orleans exhibit was made in the winter.

We think now we have more than five hundred varieties bearing in Waupaca county, some of which were planted in 1849. And I know of one hundred trees in bearing which were planted in 1850. Quite a large majority of these produce good fruit, and many of them should be propagated. Some of the cions from these trees were sent further south, and so far prove to be all right.

Many of our seedlings have been sent to trial stations in different states. Some to Aroostook County, Maine, and very generally we hear good reports from them.

It is not possible for me to speak of all the seedling orchards in Waupaca county, for if I did this would be a long paper, instead of a short one as our secretary has requested. But I am satisfied with our attempt at raising seedling apples, and the show which we make at county and state fairs; indeed I was more than satisfied with the splendid show we made at New Orleans.

But what could we have done without that one hundred and thirty-five varieties, which made our show up to two hundred and two plates, being the largest collection on exhibition.

In conclusion let me say, by all means plant seeds of your hardiest and best varieties. If you do so we shall yet succeed in raising fine apples much further north than Waupaca county.

J. C. PLUMB — Shall our delegates present their special reports at this time or will a time be set apart for them?

PRESIDENT — We shall give all of our visiting friends all the time they wish: they have come from other states and we want to get all they know.

DISCUSSION.

J. C. PLUMB — In the main I agree with Mr. Springer. I have studied those Waupaca seedlings for the last fifteen years and am satisfied that the product of the Waupaca seedlings is from the seed of an apple of a very different class. In following up seedlings through the country I could name thirty different seedlings found there from the same source. In the northwest we are after something extremely hardy and they tell us to plant seeds of the Russians. The Russian reproduces itself; if we want better varieties we must use better varieties of apples.

A. J. PHILLIPS — Has the influence of the water in Waupaca county anything to do with the hardiness of the fruits in the county? Mr. Wrightman got the seeds from which he raised his apple trees out of a barrel of fruit that came from the east; he used to plant them as he was going to his work and the trees stand there to-day. Many think they are the seeds of the Baldwin or some other good variety of apple. Mr. Wrightman has trees that that will measure three and one-half feet in circumference. He said: "We were so poor in this county that the tree peddlers shunned us. We all came from an apple country and thought we could not do without apples and we were obliged to raise seedlings." I want to ask about the Wrightman's russet?

WM. SPRINGER — The word russet has been dropped and it is now called Wrightman.

A. J. Phillips — With regard to those trees the Logan Sweet is all I can recommend because they blighted so badly. There are nineteen varieties of seedling apples in an orchard near Appleton, seedlings of the Duchess, that resemble the Duchess. It is wonderful, the fruit and fine appearance of those seedlings in Waupaca county!

The secretary read the following letter from O. C. Cook, Oconto, Wis.

OCONTO, Wis., January 25, 1892.

B. S. HOXIE,
Secretary Wisconsin State Horticultural Society.

DEAR SIR: — Your favor of the 18th inviting me to attend your annual meeting, is at hand. I would like to be there and hear some of the big guns talk on horticulture, but hardly think I will get information enough to make it pay. I do not think the people of Wisconsin will succeed in raising apples until they learn to take care of the trees. About one-half the people will dig a small hole in the sod, put in the tree and leave it to itself, and then if the tree dies, why it was good for nothing. Then, again, some who would properly care for a tree do not know just what varieties to plant. My opinion is a tree to be hardy must be low headed, low branched, not more than three feet from the ground; heavy top and stockey, good roots, not one of those tall slim things without any top. My best trees now are what were called culls when I set them out fifteen years ago. I never had any success with trees I got from Bloomington or Rochester nurseries, but I have some good trees from Beaver Dam and Waupaca — but all those nurseries have too many varieties, better have few varieties known to be adapted and hardy than so many half hardy. I was very sorry Prof. Goff could not have come to my place when fruit was on the trees. At the present writing the prospect is very favorable for a good crop next season. My trees never looked better.

I shall set out two hundred more in the spring, which will make twelve hundred trees in my orchard, all looking thrifty. The old maxim, "Eternal vigilance is the price of liberty," should be applied to the fruit grower, for we must watch at every point, and if they do not look healthy to know the reason.

The most of the apple trees are *starved to death*, and cannot resist disease as though they were full of life. I think I have a wonderful seedling apple which I call No. 18, a seedling from Tetofski's hybridized with Duchess. The tree is now eight years old and eighteen feet high, shaped like Tetofski, but grows twice as fast, and last year I picked three bushels of apples from it. The apple looks like Duchess, but of better quality, and ripens from three to four weeks earlier. I have come to the conclusion, if you plant seeds from any apple and the trees surrounding that tree are all good fruit you will not fail in getting good fruit from your seedling.

Please excuse my long letter.

Yours truly,
O. C. COOK.

J. C. PLUMB — I want to make some observations about those Waupaca county fruits that will probably not be made by any one else. As I passed through that county some fifteen years ago I landed at a little depot in the midst of a sand prairie, and enquired for the Wrightman orchard. As I went towards it I began to ascend and I found what we call a boulder clay, a tenacious boulder clay. I found a Ben Davis in full bearing size, it bore a heavy crop of fruit and then died. The success of fruit in Waupaca county is due to that boulder clay. The success of Mr. Phillips — he is on a limestone ledge with sandstone beneath it — is that same boulder clay. You get on the east side of Mr. Cook's and you will find no boulder clay and no fruit. Mr. Cook has the lake influence to help him; you have got to have the location and the climate comes in secondary.

SECRETARY — I put myself on record several years ago by saying that the best apple growing region would be found in the northern part of the state. When I started out with Mr. Morrison four years ago with the Institutes there was nothing that would throw a wet blanket, so to speak, over the audience quicker than to mention the subject of apple growing. Now he tells me there are many requests for horticultural sessions, indicating there is a growing interest in our state in that line of work.

E. H. S. DARTT — I happen to know something about the region spoken of. I raised five hundred bushels of apples in one season in what was at that time Marquette county, now Green Lake. I found where deep sand existed it was necessary to mulch heavily to obtain a growth and where clay it was not so necessary. I think the reason there are so many seedlings there is because it is a good fruit country. I raised a good many varieties that you could not raise now. I do not think the varieties would succeed in Minnesota. We must have hardiness up there and I think hardiness will come in as essential with you in the future, if it has not already.

APPLES AND APPLE ORCHARDS IN SAUK COUNTY.

By CHAS. HIRSCHINGER, Baraboo.

The following communication, received by me January 6th from B. S. Hoxie, Secretary of Wisconsin State Horticultural Society, explains itself:

"FRIEND HIRSCHINGER: I have given this as the title to your paper, to be read at the coming annual meeting at Madison, of the State Horticultural Society, 'apples and apple orchards in Sauk County,' because it has gone out that Sauk County can beat the state in growing apples, notwithstanding Waupaca claims the honor." *Signed* B. S. HOXIE.

As soon as I found out what my subject was I inserted the following in the Sauk County papers:

It is a well known fact that Sauk Co. has at least made the best display of any county in the state at the fairs, and Milwaukee and other papers have boomed Sauk County as being in the lead on apples and other fruits, hence there seems to be a desire from other parts of the state to hear about Sauk County apples and apple orchards. And as I am selected as the victim to prepare the paper on the above subject, and wishing to present Sauk County's orchards and apples truthfully, and not knowing the extent of orchards, I am compelled to call upon horticulturists to help me, which I hope you will do cheerfully. This you can do by writing me letters, giving therein the numbers of trees you have in your orchard, number of acres, and about the number of bushels raised per year, for five to ten years. The varieties, not to exceed ten in number that are most profitable for market, and such other information as you feel willing to give me.

I want to hear from the invincibles that have kept up faith amid discouragement, and are still faithful and pressing forward, both profesionals and amateurs. To make my paper complete, I also want to hear from those that have once had orchards and failed. Tell me why you have failed, and how you feel about it. Whether you still have faith in even a single variety of apples. If you know or hear of a good seedling apple send me one, or tell what you know about them. The same with new Russians. I want to hear from those having Russian orchards, and I want to hear from all parts of Sauk county.

I want the dark side and the side that is not so dark. Friends, when you read this say to yourselves, "an answer is wanted from me." You will not surprise me if your answer should be somewhat discouraging. Please attend to this at once. Send along your letters, and in due time you shall hear from me. County papers please copy. Address,

CHAS. HIRSCHINGER.
Baraboo, Wis.

The first answer received was from Prof. A. Wood, who sent me two seedling apples; the tree, he says, is hardy. Apples about size of the Westfield Seek-no-further, and similar in quality, and is a Sauk county seedling, but has not as yet been propagated.

Mr. Geo. Townsend, an old settler and orchardist, also has a seedling apple which he thinks very promising, Tree twenty years old and very hardy.

Mr. J. Palmer also has a seedling apple of which he has had quite a number of trees grafted and set in his extensive orchard. This makes the nicest nursery tree I have yet seen and appears to be very hardy; apples resemble Walbridge in size and shape and of about the same quality. Mr. Palmer also has another seedling apple with which he is favorably impressed.

The Excelsior is an apple that originated in the town of Excelsior by Jasper Odell. The original tree is now about forty years old and has been an abundant bearer of a Walbridge shaped apple of good quality, and as late a keeper as the Willow Twig. The original tree is now said to be in good healthy condition.

The Baraboo is the only apple of my own origination that I will mention. This is a seedling of the Duchess of Oldenburg, and the original tree is twenty-eight years old, and it is an improvement on the Duchess in every way; trees of same color only not so crooked and hardier. The apple is of better quality and larger and more attractive and season same as St. Lawrence, only a better apple to eat and ship.

Newell's Winter — Of this variety Orange Newell is the originator, and as this variety is now so well and favorably known as undoubtedly the best and most profitable winter apple, and as the original tree is said to be at this time in good condition and about forty years old, and younger trees giving such universal satisfaction, and as it has been so long propagated, there seems to be nothing for this variety to do only to go ahead and do as well as it has done before. This variety was formerly called Orange Winter, but the name was changed in 1891, by the Sauk county Horticultural Society, and approved by the State Horticultural Society in the same year.

The foregoing are Sauk county apples and of Sauk county origin; there are many more Sauk county seedlings that promise well, but have not been sufficiently tested to need special mention at this time.

I will now speak of apple orchards in Sauk county twenty years ago. Apple growing and orcharding was considered a success, but later the severe winters of long continued cold weather, two years in succession, and followed by severe droughts, only served to show how we were mistaken, and those beautiful orchards of years ago that were once a source of pleasure to their owners, turned to be an eyesore to many, and not only did trees die on low grounds, but also those upon hilltops and on all slopes that were not protected by windbreaks of some kind from the northwest. But not all varieties shared the same fate. A few endured the severe cold, and a few orchards on favored locations, although injured some, under favorable seasons rallied again and were a source of profit for their owners, which tended to kindle up hopes again, and many in Sauk county resolved to turn over a new leaf and try again by planting varieties more hardy, whilst some insisted that it would never be so cold again. and would plant the same varieties over again. But those have since seen their folly in planting the Pewaukee and Ben Davis and trees of that class, and now planters here seem to want trees as hardy as the Duchess and hardier, and this accounts for the large number of trees the Minnesota parties have sold here, as those men have always something that is new and hardier than can be had elsewhere; at least they say so, even if they are little worthless wild plants palmed off for De Sota; and some that have been looking for the large apples they saw by picture or in glass jars, turn out to be crab apples. But it is said it is a long lane that has no turns, and the turning point is mostly reached in Sauk county, and the nurserymen need no longer tell those that have been successful orchardists what to plant, they will tell the nurserymen what they want and wish to plant; experience has been their teacher.

There are many orchards in Sauk county, but will only speak of a few at this time, or rather let the owners speak for themselves, and as for my own orchard, I will only say that it has not only been a source of pleasure to me even if I have lost many varieties, but also a source of profit. It now covers twenty acres, of which, however, many are not yet large enough to bear fruit. I have a few trees planted in 1847 — three thousand bushels has been the largest crop and 500 the smallest for the last ten years. Fameuse, Wealthy and Duchess have paid best thus far, but I am looking for profits from McMahan's, Newell's Winter, Switzer, etc. Mr. Geo. Townsend has an orchard of 450 trees, all planted the past seven years. About seventy of them bore the past season: situation on a high clay ridge with northern slope, protected on the west by timber. The following are his leading varieties: Wealthy, Longfield, Transparent, Duchess, Golden Russett, Hybernal and Germain Calville.

Mr. J. E. Palmer has in his orchard one thousand bearing trees and one thousand not yet bearing. The site of this orchard is a northeast slope and part low down land nearly on a level with the Baraboo river and what is known as Portage marsh, and is protected by bluffs and timber on the southwest and west. Mr. Palmer, who is one of the most successful orchardists in the state, attributes his success largely to its being so close to the marsh, which extends from the Baraboo to the Wisconsin river. Duchess, Fameuse, Plumb's Cider, Utter, Newell's Winter, Wealthy and McMahan's White, is given as his favorite list — 3,000 bushels have been grown in this orchard in one year.

Franklin Johnson's orchard is situated on high clay ridge with timber protection, and I well let him tell his own story as reported to me.

CHAS. HIRSCHINGER, ESQ.

Dear Sir: I have about six acres in orchard. Probably from 350 to 400 bearing trees and raise from 200 to 1,000 bushels of apples per year.

Our most profitable variety has been the Fameuse. The Oldenburg has done equally well in proportion to the number of trees. I have 20 crab trees — Transcendents and Hyslop — that have been a source of income for several years. The past season they brought me $87.

In 1882 I set an orchard of 300 Pewaukee. They did magnificiently for two years. The winter of '84 and '85 used them up. They did not all die at once but *every tree is gone now.*

I intend to set 200 trees in the spring. Of these 50 will be Duchess, 50 Wealthy and 50 Longfield. The remaining 50 will include some of the newer varieties, but more of the old favorites such as the Fameuse, Plumb's Cider, Tallman Sweet, etc.

I am not sanguine of success. The only thing that I fear with regard to the Duchess is "the Gouger." Of the Wealthy I fear the fruit will drop before it reaches maturity and I should like the Longfield better if it were larger.

I sprayed my trees three times during the past season and think I received some benefit from it, but do not know whether the freedom from worms was due to that or to something else. In spraying my crab trees I took great pains to make thorough work of it and my crabs were remarkably free from worms, while in an orchard adjoining me it was very difficult to find a *single crab apple* that was perfectly fair. The year before I picked up every little windfall and had it destroyed. My neighbor did not spray, neither did he pick up his windfalls.

Yours Truly,
FRANKLIN JOHNSON.

Thus far I have been reporting orchards of old standard varieties. I will now report one Russian orchard, that of A. G. Tuttle. This orchard embraces 110 varieties of the new Russians apples planted in 1870, two of each variety. Thirty-two of those varieties have proved desirable; they are hardy, at least passed through all winters since 1870 uninjured. Those varieties comprise all the seasons from two weeks earlier than the old early harvest down to the season of the Repka Malinda, that will keep longer than the little Red Romanite and has the advantage of that old variety in keeping in bearing; a much better apple. Those trees are healthy, vigorous, productive and as free from blight as any selection of 32 varieties taken from a list of all the rest of the world's apples which are grown in the United States. Twelve of these varieties would take the cream of the list and would comprise all that is required by the planter of the commercial or home orchard. We find in 50 sorts not more than 10 that are better than the Duchess and many are hardier. This orchard is on high ground and comes the nearest of having no protection of any that I have thus far reported. I am under obligations to A. G. Tuttle for information regarding this orchard but failed to get names of the 12 varieties he favors. Much has been said for and against Russians but facts are stubborn and the facts here are that those trees have been hardy enough to withstand even the severe and long-continued cold since 1870 and the probabilities are that we will never have a colder winter than we have had. There are many orchards in Sauk county upon which I cannot report in detail. Some orchards that are well protected and site is a north slope still have the Pewaukee and Ben Davis in bearing and some Pewaukee trees are still in good condition. There are also many large orchards recently set and many trees will be set the coming spring, and yet there are many of the best locations for orchards yet uncleared, and as growing apples has been profitable and prices good for a number of years and orchards promising well and with the present enthusiasm I see no reason why Sauk county will not become the banner county for apples if it is not already, and also for grapes.

DISCUSSION.

C. J. **PATTEN** — I would like to ask Mr. Hoxie how far in from Lake Michigan would he think it would be good orchard country.

SECRETARY — I would not limit it to one mile or ten, but I think whenever you find the soil you will be successful.

A. L. **HATCH** — I think Mr. Patten wants to know how far the lake influence governs apple growing?

SECRETARY — I am not well enough acquainted with the isothermal lines to say how far that influence will determine the success. I saw fine apples growing in Duluth and Superior and think you will find them growing in adjoining counties.

E. H. S. **DARTT** — I think it is influenced by the prevailing winds. In Michigan the prevailing winds are northeast and east; they raise apples there and peaches. The winds blow *from* your state. In Waupaca county the prevailing winds are east and southeast and there are a good many lakes there; then there is altitude.

H. W. **WILLIAMS** — I think the wind from the lakes has affected the fruit right here in Madison. On the University farm I see Prof. Henry has set an orchard away back from the lake, and that makes me think the lake winds are an injury. You can raise fruit in the sand if you dig out the sand and fill in with stones. I can make trees grow on sand. I have lots of fruit to give away.

J. C. **PLUMB** — About that University orchard: they had an orchard about twenty-five years ago on what is the south side of the hill, and I said to them, That is not a fair test; you have a northern slope, now plant your apple trees on that if this is an experimental farm; and they put out an orchard on the northern slope. When these two orchards came into bearing the orchard on the southern side of the hill at once began to show signs of failing, and after a couple of years they began to cut the trees down, for they did not produce fruit enough to pay for the use of the ground. On the other hand, the orchard on the northern slope bore good crops for many years and was decidedly a success. It was not cut down because it failed to bear fruit, but because no one reaped any benefit from it except the city boys, it proved to be a place for thieves and got to be a nuisance, and for that reason was cut down. It was a great pity that it could not have been preserved, if for no other purpose than to illustrate the fact that profitable orchards can be grown in Southern Wisconsin. Now the whole state of Wisconsin is beneficially influenced by the winds from the lakes, not only of Lake Michigan, but of Lake Superior.

CHAS. HIRSCHINGER — It is a well known fact that Sauk county has made as good displays at the county and state fairs as any county in the state and there seems to be a desire among fruit growers to hear about Sauk county apples and their origin. Now I know of two farmers in that county that live on adjacent farms; one of them has made a great success and the other a great failure of orcharding. One man did just as Mr. Kellogg has so often advised; he put on a whole load of manure around every tree, and the result was he killed his whole orchard. There are some as fine apples in Sauk county as you can find anywhere and they are seedlings, but we are not trying to boom these apples. I am also very much interested in the apples grown in Richland county. I believe the apples of that county, though small, are ahead of those large ones of Sauk county. I believe the Newell's Winter is the best seedling we have. It is the same that we used to call Orange Winter. It is not a new apple at all but an old one and I think it is fully twenty-three years since I first grafted it.

Q. What are the oldest trees that have come under your notice in Sauk county?

A. I can only guess at that, but I think some of them must be fully thirty-five or forty years old; one must be that old.

Q. How long have you known it?

A. I think about twenty-four years.

Q. Is the old tree, Newell's Winter, still bearing?

A. Yer, sir, it bears regularly.

A. J. PHILLIPS — I have lately been at a loss to know which is our best seedling. We used to put a good deal of dependence in what Mr. Whitney said; he declared the McMahan was the best seedling apple we had, and in the past I agreed with him. When I was at Washington, and they asked what was the best apple of the seedlings in Wisconsin, I told them the McMahan, but Prof. Goff says Newell's Winter is the best, and I am now very favorably impressed with that apple.

E. H. S. DARTT — I am known as an objector in my state and do not known but that I have rendered myself a little obnoxious sometimes by going back on boomers. I do not want to get that reputation in your state but I think you should go a little cautiously.

SECT'Y — How much caution do we want with a variety twenty years in fruit?

A. L. HATCH — I want to repeat my experience with the McMahan. No apple has ever been introduced that has stood for hardiness in Wisconsin like this. I have 150 trees and they are, I think, the best trees in my orchard. They will, in a period of ten years produce more money for me than any other. I had about eighty barrels last year in which the hot spell did so much damage to fruit all over the country. When that hot period struck Chicago the market went all to pieces, and apples went down to twenty-five and forty cents a barrel. I sent some of my apples to Chicago and in the lot there were two barrels of McMahan, and these two barrels brought $6.50. I sent ten barrels at another time and they brought $32.50. I sent the rest of my McMahan's there and they brought more than any other variety. As to their hardinesss; four times since my McMahan's were set out the mercury has congealed, and we took premiums on apples that the trees had come out after having the mercury go down to 52. We stuck by the Duchess until all of them went by the board. We had Duchess four inches in diameter that laid down and died. Newell's winter died. You will get more silver dollars from the McMahan than from any other. It is worth while you should know it if you are enthusiastic over Waupaca or Sauk county, I will have to tell you that Richland county has outdone them all; it has done better than any other county in the state.

CHAS. HIRSCHINGER — I want to square myself before this audience. McMahan's White had its origin in Sauk county. Mr. Palmer stands as high in Sauk county as any other man; he is after those silver dollars; he may not be quite so shrewd as Mr. Hatch and not be getting quite so many of them but he is getting them in his quiet way. I can see that next to the Newell's Winter the McMahan has stood up, but there is no apple in Sauk county that is as reliable as the Newell's Winter and I believe there is more dollars and cents in it than there is in the McMahan. I think, taking everything into consideration, that it is the better apple; it will bear heavier, keep longer and is a better seller.

C. G. PATTEN — I rise somewhat on behalf of the nurserymen of Wisconsin. Iowa people are getting wonderfully enthusiastic on the subject of planting orchards, not only one acre but hundreds of acres. We have one county that yields over 800,000 bushels of apples. I am very glad to hear the McMahan so highly spoken of, I have tried it with another seedling propagated in Wisconsin. On our black, sandy soil it has made rank growth and it has not proven so hardy. We must take into consideration the fact that it was originated on an entirely different soil from ours in Iowa, and we know it is a fact that fruits do better near the locality and on similar soil to that on which they are originated. I had in a winter, some six or seven years ago, a number of trees of the McMahan on high land. I will say to you, I am a nurseryman and the apple I am going to speak of is one of my pets, it is an apple raised from seed obtained about nine miles from Portage. After that severe winter of six or seven years ago about nine or ten of the McMahan showed signs of injury while not one of those trees from the Duchess seedling were affected. The name is a little unfortunate perhaps, I called it originally Duchess No. 3, but it is now called Patten's Greening; the original tree was transplanted from a good soil to a poor one. It is a much better tree than a Duchess tree that was transplanted at the same time to a good soil.

A. L. HATCH — Mr. Patten has touched upon something that needs an explanation. I was at South Wayne, and while there a gentleman said to me, "I have manured my trees heavily, the Ben Davis bears splendidly and the Tallman not at all, now what is the reason?" It is because of the feeding qualities of the two trees, and that is the reason why Mr. Patten found such a difference in the two trees he has mentioned. All of these things are contained in the problem we are trying to solve.

S. I. FREEBORN—In nursery rows I have seen Transcendent crab trees killed, and you will see it when you get that extreme dip of the mercury. There is a limit in whech all trees will freeze to death. I think Mr. Hirschinger has stated the case pretty well, he has a good tree in the Newell's Winter. I wish I had set it instead of the Orange Russet. The Newell's Winter has some faults; it is a brush heap with me.

E. H. S. DARTT—Wisconsin has some pretty good apples. My friend Patten comes here from Iowa, he is a little modest, but I think an apple grower in the west should have a good deal of cheek, and I want to say that we, in Minnesota, are going to beat you all.

J. C. PLUMB—On general principles we must study local adaptation.

E. H. S. DARTT—I do not think local adaptation is just what we want, we want general adaptation. A shrewd Yankee will get along anywhere, and I am sure we do not want local, but general qualities.

GEO. J. KELLOGG—You may put down a live Yankee and then put down a live Dutchman by the side of him, and he will lay out the Yankee every time. The trouble with the apple trees in this state is they are starved to death, and I have been writing to the farmers urging them to manure their trees. I believe the lake influence affects the trees about sixty miles. I am glad Mr. Patten's seedling came from Wisconsin; that is a good point; it puts out its limbs like the McMahan. We have had no test winters lately.

Q.—What is the best way to prevent the premature dropping of apples, especially the Wealthy?

A.—Set on the north side of a hill and pick off the fruit freely.

Q.—What is the best way to prevent overbearing of such kinds as the Longfield?

A.—Same answer will apply to that.

A. J. PHILLIPS—I have been taking some pains to look up seedling apples in this state. I was opposed to receiving Newell's Winter until it had been tried all over the state. I was first led into growing apples by seeing an exhibit at Milwaukee from Sauk county, but I soon found out that I did not live in Sauk county, and I have been a little careful about trying kinds that had been grown at Baraboo. Mr. Palmer is, as Mr. Hirschinger said, one of the largest growers in the state. It does not do to take an apple tree that does well in some localities and infer that it will do well in all places. I know of a man that last year got more money out of the Walbridge than from any other variety, but all the same we have about discarded the Walbridge in this state.

CHAS. HIRSCHINGER—About Sauk county being such a wonderful fruit county as Mr. Phillips said it was, I want to tell you that Sauk county is burning up just as many apple trees for wood as any of you are.

Q. Is the Wealthy successfully grown in this state?

A. It is.

Adjourned.

SENATE CHAMBER,
TUESDAY, 2 P. M.

President Thayer in the chair.

GEO. J. KELLOGG — The question is whether we will continue the discussion on apples or whether it will take all our time this afternoon for the reports and the the election of officers?

PRESIDENT — I think we can finish the apple discussion.

A. J. PHILLIPS — "I have but little that is new or different from what I said last winter." I have spent a number of days at Waupaca and at Mr. Randall's orchard at Appleton; he had twenty seedings; he gave me cuttings from six and I am sorry to say that but one of them is a winter apple. This orchard is one and one-half miles from Lake Winnebago. My opinion is, there is a great deal in adaptation. I have had a great many letters inquiring about the Peerless and we went to see the old tree; it was not in bearing this year. I visited the Matthew's Russet tree with Mr. Springer. He knows more about seedling apples than any man there, but he did not know the Matthew's Russet had broken down and I had to tell him. It is a broad, spreading tree and was overloaded with fruit that caused it to break down. I went to see the Okabena tree that has perhaps sold for more money than any other tree in the country. I went, with Mr. Sias, of Rochester, to see a tree that was called at first, Hart's Seedling; later they found it was originated by a man named Brett, and they called it Brett's Seedling. Mr. Gaylord, of Iowa, who is really the Springer of Iowa, has been spending a good deal of time looking up the Malinda; it was the best looking specimen of all at Washington, and I had the privilege of seeing all of the apples.

E. H. S. DARTT — Do you know of any of the seedlings that have been grafted and after many years have become profitable?

A. J. PHILLIPS — Yes, the Malinda has been. I went to see the Longfield, I saw fifty trees in bearing. I heard that Mr. Somerville, of Viola, Minnesota, had several trees in bearing; his were top-worked on the Orange Crab, which I have never succeeded in working on. I think the way is to find some tree that is as good as the Virginia Crab, if you find such a crab (one without broad branching limbs), use it and then protect the trees. You had better set one tree and prepare the ground properly than to set more without proper preparation. Set one tree, if it is only a Virginia Crab, and then do not starve it, give it some manure and protect it with lath.

S. I. FREEBORN — I would like to have you tell us something about the Peerless.

A. J. PHILLIPS — That Peerless is a little delicate question to touch upon. (A voice — Tell the truth.) Yes, I'll tell the truth. I have heard it said, "tell the truth and shame the devil." I *have* told the truth and raised the devil. I may not do it here.

J. C. PLUMB — Inasmuch as the Malinda has been brought forward so prominently, I must say after growing it for fifteen years I have given it up as unprofitable.

A. J. PHILLIPS — The fruit of the Peerless is good. The old tree stands in a protected place with a hedge of willows protecting it, it stands right in a corner.

SECRETARY — Do you think protection had any influence on the tree?

A. J. PHILLIPS — Well, you can draw your own conclusions. I do not believe much in protection. The tree stands there. It is said of the Peerless, "it will stand on the open prairie." It has been said that the Peerless was the product of the Duchess and Tallman Sweet. Mr. Miller says his mother bought some apples in threshing time and sowed the seeds, he did not know whether they were Duchess or what. I think the Peerless at ten dollars for six trees is a very expensive tree to try. I found a man within three miles of the old tree who paid that amount for six trees. I said to him, you must have a good deal of confidence in the tree, and he said, "I do not know. I have never seen the old tree. I bought these trees because the man was a friend of mine."

S. I. FREEBORN — I would like to have him tell us if he has ever seen the Bon Homme?

A. No. The Bon Homme is away down in Nebraska and I do not think it would be very good for us in the north.

C. G. PATTEN — I presume one reason why the Malinda has not been propagated and sold more extensively is because it is not a very popular tree with the nurserymen; it is a slender growing tree. Trees were scattered here and there among the farmers, not more than three or four trees being found in a place. Many men being questioned as to the hardiness of the tree say it is as hardy as the Duchess. One thing which has made it unpopular — it is not as popular as it deserves — is because it requires the whole season to mature its fruit and farmers gather it sometimes four weeks before it is ripe and put the crude fruit upon the market. Mr. Plumb says, "there is no place for it in Wisconsin," but I believe there are many places in Wisconsin where they would be glad of such an apple as the Malinda for it is one of the best keepers we have.

A. J. PHILLIPS — There is a boom on the Malinda to day and it is coming into Wisconsin. I must say of the specimens I found in Iowa cellars, it was the best matured fruit I saw. Mr. Dartt is paid a salary for conducting a Tree Station and how is he to answer letters concerning the Peerless when he has not a single Peerless tree at his station? He cannot afford tobuy a tree and he is to honest to steal one.

BEST METHOD OF PROPAGATING APPLE TREES FOR THE NORTHWEST.

BY A. CLARK TUTTLE, Baraboo.

There are some nurserymen in the United States that are now advocating "whole root" grafting of apple trees, as the only way to start a hardy tree for the northwest. I thought possibly a short history of our different methods of propagation during the thirty-three years of business at Baraboo, might be interesting, especially to those who are inclined to favor the whole root or crown graft theory. Please take the opinions expressed herein, as simply my opinions, and please be free in expressing yours after the paper is read. We started the nursery business at Baraboo in 1858. My father had always been a horticulturist, an amateur, had a fondness for gardening and fruit growing, but as nurserymen, we had no experience whatever. Judge J. M. Clark, the introducer of the Duchess apple into the northwest, and a skillful nurseryman, was, fortunately for us, our neighbor, and instructed us in many things. Then we had "Barry's Fruit-garden," for our book of reference, in which Mr. Barry says under the head of whip and tongue grafting, "The graft is always put in at the collar." Not admitting the use of piece roots at all. Mr. J. C. Plumb, then on the "76 farm," near Madison, furnished us our first stock, 1,000 crown graft of apple. They were planted with care, a spade and a piece of 2x4 scantling to tamp with. I think we sold 1,000 trees from that stock, possibly Brother Plumb exercised his usual generosity and counted liberally, but they nearly all grew, and made salable trees. Those that grew at all had to grow straight and regular, as each wayward branch or leader was coerced by a splint or guy-line. I could here spend time on the lack of particular care to each individual tree or plant; on the planting of more stock than can be taken care of *well* and giving them too little room in the row to develop, which are serious faults in the nursery business of to-day, but this would be foreign to my subject.

The second stock we put in ourselves. It was most emphatically whole root, the union made at the collar. The scion and root were exactly of a size. If the first cut on the root was not just the right slant, we could not repeat it, as that would bring the union below the point of germination, therefore, that root was thrown down, and we tried another. I have groaned many times at that waste of roots, since we have had to buy the roots, when scarce and high priced, and we were using three cuts to the seedling and often four. All of Mr. Barry's requirements were followed to the letter. Each graft was made just right, if it took all day. We waxed the grafts by rolling the union of each in the bristles of brush which had been dipped in hot grafting wax, and threw them into cold water. It was the method we thought could be done the easiest of several in Mr. Barry's book. There was a wad of wax around each graft three fourths of an inch in diameter at least. They were well waxed. Nature must have had a smile of contempt on her face when she covered the unions of those first grafts.

The next year we used old newspapers painted with hot wax and cut in inch strips. We found this quite an improvement. Followed this style of winding three more years, when we learned of the use of No. 16 cotton yarn drawn through hot wax. Used this several years and then the same sized yarn without any wax. Bring the yarn, the last time around, under the lip of the graft and break it off. This holds the parts in place just as well or better than if waxed, and it makes a much smoother union. Often it is hard to find where the parts joined. The yarn also rots off sooner than if coated with wax.

About the fifth year we noticed that many grafts which were washed up to, after making several inches of growth, had thrown out roots above the union, from the scion. We proceeded to experiment on this by putting down some of the grafts to the top bud. Also put in a few crabs on selected second cuts, and planted them deep. Found roots from the scion on nearly all, at two years old. They made nice well balanced trees, no more mal-formed crotches than among the "whole roots." About this time a severe winter, with little or no snow, was experienced, the mercury dropped into the bulb once and was near 30° below zero several days at a time. The seedling roots, unprotected by snow or mulch, were killed in a great many cases. Duchess as often as any variety. The trees started all right in the spring, but the foliage soon began to turn yellow, and drop off as soon as sap in the tree was exhausted. The best cultivated orchards fared the worst, of course. This hurried up the hardy root matter. Each year we used less and less root, until for the past six years we have worked under the following idea, that the best way to propagate an apple tree, for Wisconsin planting, both as to its hardy top and root, is to select a variety which passed through the winter of 1884-5 unscathed. Cut a scion five inches long and work it upon a root, as near the size of the scion as possible — 1½ inches long, wind it with waxless No. 16 yarn, plant it up to the top bud and when a growth of from 3 to 6 inches has been made, work up two inches of dirt to it. Certainly three-fourths of the roots will push from the scion, and the few secondary roots which start from the piece of root are low enough to be protected from heavy freezing. The resulting stock is fully as well formed as those on whole or crown roots. No more mal-formed crotches; grow just as vigorous. We believe the whole root talk is a canvassing fad. Something different has to be used each season to catch the orders. One season there was no hardy apple tree except it was budded. A budded tree is the least hardy of all styles of propagation, as it must be put in at or above the surface of the ground and cannot throw a single root of its own. Some talk of sowing crab seed to get hardy stocks. The crab is not a congenial stock for the apple. Minnesota can show the failure of crab roots for the apples.

Some think if the tap roots have been cut a tree is surely tender. If that is the case the pear should be much hardier than the apple, as its roots will run down in spite of cutting. It is almost impossible to get any horizontal roots on a pear tree. On the contrary the virclus and evergreens, found nearest to the northern limit of tree growth, are known to have less and less tap root as you go north, till at the highest altitude where they are found, the roots do not penetrate down to more than five to six inches at the most.

We do not believe the root influences the stock much, if any. The root does not make the top tender or hardy. A Duchess top is just as hardy worked upon a seedling root, as when grown upon its own roots.

The Winter Winesap and Tetofsky represent the two extremes of the light and heavy rooted varieties, in the whole list of apples foreign or native. The Winesap is the easiest of all apple trees to dig, while the top is one of the most vigorous ones. The Tetofsky is a slow grower but has ponderous roots, the hardest tree to dig with which I am acquainted. These two sorts may be worked on the same lot of seedlings, and you may put the Winesap on the crown cuts if you wish, and plant in same soil, give same care and cultivation, and you will notice the same marked difference in style of roots.

I would rather have the second cut of a good seedling than the first or crown cut, as the first cut will send up one or more sprouts as a rule, which adds to the work, if they are removed, and if not disturbed the first year, as is often the case where a person plants more grafts than he can care for, as he should, and these sprouts rob the scion, and the graft has to grow one more year to make "a first-class five to seven foot" tree.

To sum up my opinion as to the best mode of grafting or propagating the apple for this climate, I would say that I do not believe anyone can pick out the whole root or crown grafted trees from a lot of three year trees which were worked on pieces of roots and planted promiscuously. Some say they can. I have tried it several times and I cannot do it.

The root graft of apple is simply encouraged cutting. The last season's growth, such as is used for scions, will almost root of itself. Under the most favorable circumstances, it has been known to callous and send out feeble roots. The cutting needs a piece of root to encourage the roots to start. That is all the root is for in making a graft. The less root there is, if the cutting or scion starts vigorously, the better.

DISCUSSION.

A. G. TUTTLE—My orchard was trees that were grafted on crowns. The Duchess grafted on crown stands there to-day because it is hardy. Whole stock grafting follows in the wake of budding and is done to catch the trade.

MR. FERRIS—This subject has been discussed quite lengthily in Iowa—whole root and piece root. While I am on my feet I want to thank this society, on my part and in behalf of my friend Mr. Patten, who is modest, for the honor, because I think it is an honor to be made an honorary member of this Society. I want to tell Mr. Tuttle that I agree with his paper wholly on this principle of crown and piece root grafting. I want to speak of the Walbridge; it is bearing good crops and they are keeping well. I want to say a good word for the McMahan: I am not growing any trees, but it is good wherever found. I know but little of the Malinda, but am glad to learn what I have of it here.

ADDRESS OF PRESIDENT THAYER.

Ladies and Gentlemen: Again the representatives of one of America's greatest industries have assembled, bringing we hope, some new experiences, some new thoughts and many new suggestions. Again should the designs on the Horticultural trestle-boards be drawn by our master workmen, fully explained to our entered apprentices or beginners in the work, and each with pride and respect for his calling, return home with renewed courage and zeal for the work of 1892.

We as horticulturists come together with a feeling of pride, that we represent the most ancient occupation mentioned in sacred history. If this history be true, our occupation was formed in perfection, and in our keeping was first placed the tree that bears the most precious of all fruits, "the tree of knowledge." Why then, is not the world indebted to us for its greatest boon, "the knowledge of good and evil," although the agent employed by us at that time, has been soundly berated from that day to this.

Whether this be true or not, horticulturists still have much of which to be proud. Our product was the first spontaneous gift of nature to man. It is a medium of inspiration between human and divine. In form it represents infinite variety; in color it represents infinite beauty; in growth it represents infinite grace and in everything infinity itself. As an employment it has its special fascination. It gives health of body, and developes the best faculties of the mind.

Its study brings one near the secrets of nature and her loving ways. The mysteries of the feeding root, the structure of the breathing leaf, the unfolding and coloring of the fragrant flower, the forming of the lucious fruit, its maturity and decay, all furnishing recreation for leisure hours; a respite from weary cares: a study and employment for busy life.

With this may the devout profoundly worship; the poet be inspired with sweeter song, the painter impressed with higher beauty, and the philosopher furnished food for deepest reflection.

Horticulture pursued as a science is a most useful industry, enlarging the number and improving the quality of the fruits of the earth that add so much to the comfort of human life.

As an art it cultivates the taste, refines the sensibilities and educates the spirit to a higher grace and beauty.

It is a higher department of agriculture, requiring the same primary study, but a more careful training.

"Horticulture, the science and art we pursue, like music, like painting, like architecture, indicates in its advancement the march of civilization.

"In its continued and wonderful achievements, it is contributing to the enlargement of human life. Each fruit made choicer or more plentiful as a luxury for our tables, each flower made more perfect by our skill, each shrub and tree that shows a more graceful sweep of its boughs, or a richer foliage under improved cultivation, touches a higher range of sensibilities, reaches purer and better impulses, expands the meaning of life."

Few may be interested in scientific horticulture, but all can assist in building up the home, in making flowers more beautiful, fruits more abundant and shrubs more numerous.

Few may catch the painter's coloring or the poets song, but all can encourage the planting of trees by the roadside, the increasing of parks in our cities and villages, or in surrounding the home, be it ever so homely, with emblems of culture and refinement, that may be produced by horticultural art.

Few may grasp the philosopher's thought, but all may feel that whatever can be done to beautify or adorn, surely helps to purify and ennoble, and none can afford to be indifferent to the surroundings of their own homes.

All may become deeply interested in plain, practical horticulture and join us in one of the most pleasant industries that falls to the lot of man. True we are beset with enemies on every hand and ours is a field of continuous warfare.

At the approach of the first mellow days of spring, myriads of insect enemies spring into being, waiting for leaf, bud, blossom or fruit, on which their numerous progeny may subsist.

Every living organism seems to feed on our dainties, and every variety of fruit has its scores of different enemies. Fungus diseases come in a day and without warning, to plague us, and we are not exempt from bacteria —an enemy so small that a million may be contained in a grain of dust.

Verily, "Eternal vigilance is the price of the horticulturist's products;"

and yet, there is a remedy. Science has come to our relief and is fast solving the problem of protection against all these enemies.

What we most need is, the distribution of this knowledge and a practical application of the same by all in our profession. The development of horticulture and the increased consumption of its fruits within the last few years is something wonderful.

Even among fruit growers, few realize the magnitude of the industry and the amount consumed.

Statistics on this subject are as yet, very meager, but it is pleasing to know that pomology is about to receive the attention it deserves, and that hereafter we may expect valuable information from this source.

The first preliminary report on the nursery industry of the United States has just been issued, from which it appears that there are, in Wisconsin, 117 nurseries, cultivating 1,651 acres for nursery purposes, and representing a capital of $492,277.50; while in the United States there are 4,510 nurseries, cultivating nearly 1,800,000 acres of land valued at $41,978,835.-80, employing 45,657 men, 2,279 women, a small army of boys, 14,200 animals, and using implements valued at $990,606.04; having an invested capital of $53,000,000 in this one branch of horticulture.

The total number of plants was	3,386,855,778
Of which grapes and small fruits number	635,603,396
Apples	240,570,666
Plums	88,494,367
Pears	77,223,402
Peaches	49,887,894

From these statistics it would almost seem that we ought to be a nation of fruit growers, and supply the demand of the entire world; and yet we send over fifty millions of dollars across the sea every year for foreign fruits and nuts.

I am unable to give you reliable statistics as to our own production or consumption, but a report of the amount received by the commission houses of Minneapolis for the year 1891 may be of interest:

FRUITS.

	1891.	1890.
Apples, barrels	196,775	
Bananas, bunches	68,118	
Peaches, baskets	37,198	
Lemons, boxes	29,485	
Oranges, boxes	85,995	
Pineapples, dozens	7,500	
Watermelons, cars	333	
California fruits, cars	225	

SMALL FRUITS.

Blackberries, cases	12,745
Raspberries, cases	9,528
Strawberries, (140 car loads) cases	80,611
Grapes, baskets	446,743
Cranberries, barrels	6,241
Celery, cases	869

As many as thirteen car loads of strawberries per day have been received.

If this city can find a market for such quantities of fruit, what must be required to supply the great state of Wisconsin, and what an industry is necessary to produce what is consumed, not only within our own border, but on the markets we may reach.

The opportunity for honest, skillful, energetic and industrious fruit growers, was never better, and there was never a time when so many of just that class, all over the state, are asking so many questions as now.

They are looking to this society for a solution of many questions.

What varieties are best adapted to our soil and climate?

How shall we best propogate and cultivate them?

How shall we produce the largest crops of finest fruit, at lowest cost to meet decreasing prices and stronger competition?

How shall we pick, pack and deliver our products to the best advantage?

How shall we distribute our fruits, so that all may have some and none have too much?

These and many other questions, I hope may be answered at this meeting for the benefit of our horticultural friends everywhere.

Following these are other questions of equal importance to us as a society.

How may we best advance horticultural interests in our state?

How can we add interest to our society and increase our membership?

We have those in our society who have given their best years to this cause; they have long been pioneers and veterans in our work; some have already passed and others are near the allotted, three score years and ten; they cannot be with us many years longer.

It is our duty to crystalize their best thought and experience in proper form, for the use of coming generations, before it is too late.

We also have with us many promising young members ready for active service, on whom our seniors may be proud to let their mantles fall.

Back of all these we have the younger generation, to whom we must look for greatest and best results.

How may we best advance horticulture with them?

Our newspapers have been generous in their notices of our work, and many find it necessary to establish horticultural columns; Arbor Day and its attendant ceremonies, with the aid of state and county superintendents of schools, is doing much.

Great good is being done by our nurserymen in the ordinary way of business, and by our experimenters both for pleasure and profit.

Now in addition to all these influences, can we not as a society, devise some means by which every child, of proper age, at least within the jurisdiction of our local societies, may receive, free of charge, a plant, bush, tree or shrub for its own, with full instructions for preparing, setting, cultivating and tending it.

The fact of real ownership in a strawberry, raspberry or some other plant, would to most children be sufficient incentive to warrant a very great interest and a lasting benefit. Could such a distribution be made general throughout the school districts of the state, in connection with Arbor Day or otherwise, the moral and intellectual influence on children, the direct benefit to our society cannot be estimated.

The most important question for consideration at this meeting is the coming World's Fair.

All the nations of the earth are to bring their best products for exhibition at our very door.

Representatives of all nations are coming to study our exhibits and learn of our great resources.

What have we to show them? a great state, with immense natural resources at our command.

The great lakes on our east and north furnish us some of the best harbors in the world and direct water communication with the east.

The world's greatest watercourse, on the west affords direct communication with the south.

We have many flourishing inland cities, and one of the largest in the world at our very southern door.

We have within our border the largest iron mines in the world; almost inexhaustible forests, of pine and hard wood timber; a great variety of soils; grand scenery, beautiful lakes, the purest water, a most delightful climate and many other advantages not possessed by other states.

This is high tide in the affairs of Wisconsin and the material interests of our state may be advanced more in this one year of 1893, than a half century by the ordinary means of growth.

The opportunity is at hand and now is the time to act. The world comes to us; let us give i an exhibition of all our resources, and acquaint it with the natural wealth of our great state.

The man, or body of men, who will oppose liberal appropriations for this work, are enemies to the public weal, and should be forever relegated to the narrow circle of their own stupidity.

We have large resources at our command; we have experienced workers in every line, and with reasonable appropriations would not only maintain our present reputation as horticulturists, but add new laurels to those already won in so many departments.

REPORT OF SECRETARY B. S. HOXIE.

Mr. President and Members of the Wisconsin State Horticultural Society:

It is my pleasure to report to you the favorable condition of horticulture in our state as well as the affairs of this society.

It is true that every locality in our state was not favored with the best conditions in the results of the firuit crop, owing to climatic conditions; yet taken as a whole the year 1891 may be set down as a success for Wisconsin fruit men, and the interest manifest at our meetings as well as the increasing number of local societies organized during the year, all go to show that horticulture in our state is being recognized not only for a pastime, but as a profession to coin remunerative dollars.

Our semi-annual meeting held at Kilbourn City last June was well attended, and in fact so far as local societies hold a relation to this state society there was the best representation of any meeting ever held, and the display of strawberries exceeded anything ever before shown. The people of Kilbourn provided free entertainment at their homes; this, together with an excursion up to the famous "Dells" of the Wisconsin river, made the occasion of our summer meeting one of much profit to the society by our coming together as members and delegates.

The new departure of paying the expenses of one delegate from each local society brings an increased attendance to our meetings, enlarges our opportunities for work by getting better acquainted with each other and each particular locality.

But this practice increases the expense of the society very much while the financial side remains stationary so far as a given amount is at our command. It will therefore be a matter for our consideration at this meeting to decide whether to discontinue the practice or to cut down our premium list.

I have deemed the latter plan the wisest until you further decide, and have for this and the last June meeting offered a less amount for premiums. Some of our states makes large displays of fruit without premiums. If it thought best to continue this practice of paying the expenses of delegates, it may be expedient to allow one delegate for the year and let the local society choose either the annual or semi-annual meeting for such representation. I would further suggest that new names be sent from societies occasionally rather than the same delegate each year.

There is very urgent need for an increased appropriation of at least $1,000, by our next legislature. Bills which were introduced to this effect last winter went only to the clerk's desk for a reading though every member was personally appealed to by letter. Our work though is now better understood by this effort, and the necessity for more funds is I think, better understood than one year ago. The committee on legislation will find no easy task before them, for chapter 526, laws of 1889, which was rushed through just at the close of the section, needs an entire revision. We do not need perhaps so many volumes, 7,000 as we now have published, but we need more bound volumes. We need at least 300 pages for our volume without subjecting the secretary to the act of a menial beggar for a few extra pages. We need explicit law so that the Superintendent of public property or the Secretary under his seal may send out volumes to each local society which makes an annual report to us under the patronage of the state instead of at the expense of this society. Every high school, college, seminary, normal and charitable school in our state should be supplied with a bound volume of our transactions as well as every county superintendent and town clerk:

Immediately on the publication of the present volume Superintendent Wells asked for a sufficient number of volumes to supply each county superintendent and each high school with a copy; of course I honored his call and gave the order for the books.

I wrote some weeks since to Mr. Samuels, Chief of the Horticultural Department of the World's Fair to be present at this meeting. I have also written to Mr. Kirkland of Jefferson, Executive of the State Board of commissioners, to Mrs. John Winans, of Janesville; Mrs. Wm. Pitt Lynde, of Milwaukee; and Hon. Phill. Allen, of Mineral Point; these are the Commissioners who have the horticultural exhibit of our State under their more immediate charge or control. These ladies and gentlemen will confer with the members of this Society or a committee during the time of this meeting. I wrote for a definite sum to be set apart and under the control of this Society and we shall be asked if this request is favorably considered what amount we need and on what lines we propose to expend it. On these points we need thought to consider and wisdom to direct.

The large increase in the demand outside of our membership and outside of our State for our volumes and the many flattering letters I have received during the past two months is most certainly gratifying to us as a Society wheather any portion belongs to your Secretary or not. I have mailed in this way more than one hundred volumes and in most cases the postage has been forwarded.

Dear Sir. — We are pleased to send the volume of the Annual Transactions of this society to any one who my apply for it.

Each member is entitled to receive a copy by mail. Our funds are very limited and our state makes no appropriation for postage. If you think the volume of value to you, will you please remit the amount charged for postage (ten cents), to

B. S. HOXIE,
Secretary.

Last August I sent out the following card to our fruit men so far as their names were on my mailing list:

DEAR SIR: –

I shall be pleased to receive your early reply to the following questions:

B. S. HOXIE,
Sec. Wis. State Hort. Society.

Evansville, Wis., August 4, 1891.

APPLE — What is the quality in your vicinity? ....
Is the yield average?. ....
What is the price now?........... ... ...
What the prospective price for winter?...........................
SMALL FRUITS — Was the crop satisfactory?..........................
If not. Why?..................,.....................................
What was the average price per quart?.... . ...
GRAPES — What per cent. of a full crop is promised?.......................
WILD FRUIT — What wild fruits grow in your vicinity?..............

Give any other information relating to fruit your time and space will permit.

Name ....
County....... ....
Date...............................

The response to these questions were in part published in the *Wisconsin Farmer* and the following replies indicate the apple crop: Eighteen report fair, in quality and yield. Twenty report good, two average and eighteen poor. In small fruits was the crop satisfactory? Forty-five answers in the affirmative while sixteen answered negatively. Eight report strawberries damaged by frost and eighteen damaged from drouth. One locality reports price at 5 cts. per quart but in most every case it is from 8 to 10 cts., while a few quote as high as 12½.

Grapes show a flattering prospect, for while the number of vines is largely on the increase, ten report fifty per cent. of a full crop while thirty-five report from seventy-five to one hundred per cent., and only ten less than fifty per cent. of a crop, and in these localities the damage was from early and late frost.

I wish here to express my thanks to the correspondents who so promptly replied to the questions sent out, and if all understood the value of these reports, I am sure more would have responded and given the five minutes' time to fill out the blanks.

The good work so well begun in Arbor Day celebrations last spring by this society in conjunction with Superintendent Wells, must not lag now for our care or that of superintendent of schools. The reports made to him are indeed gratifying in the extreme. A committee should be appointed to confer with Mr. Wells in reference to further advance in the work. The circulars issued by Mr. Wells and your secretary are both published in our last volume as papers worthy of being preserved as the first in a good work. The department of instruction are heartily engaged and we shall find them allies, or in fact the principal, in this movement of Arbor Day celebration in the schools of our state.

We as a society are under obligation to the press of Wisconsin for generously publishing such matter as has been sent them relating to the work of our society, and especially are we indebted for exchanges with *Farm Field and Stockman*, *Prairie Farmer*, *Farmer's Review*, and *Orange Judd Farmer* of Chicago, *Farm Home and Stockman* of Minneapolis, *North Western Farmer* of St. Paul, *Iowa Homestead* of Des Moines, Iowa, *American Gardening* of N. Y., and our own *Wisconsin Farmer*.

These papers always publish our programs or call attention to them in well chosen words of praise. These papers have carefully been kept on file and at the end of each year are placed on the shelves of our library for future reference.

While the business of the society is largely on the increase and work in many directions demands the attention of the Secretary I have endeavored to comply to the best of my ability and my thanks are due to the members for their kindness and assistance in the horticultural work in our State and to President Thayer I return the thanks of myself and the society for the very prompt and lively interest manifest in the affairs of the Society and I can bespeak for him that earnest zeal which characterizes a legal business man for the best interest of the Wisconsin State Horticultural Society.

B. S. HOXIE,
Secretary.

FINANCIAL STATEMENT.

Wisconsin State Horticultural Society, to B. S. Hoxie.

DR.

February 1, 1891, to February 1, 1892.

Printing	$46 65	
Postage	41 00	
Postal cards	10 75	
Express charges	18 20	
Nursery stock for Stations	32 75	
Miscellaneous expenses	42 55	
Salary of secretary	300 00	
		$491 90

CR.

Received on current expenses	$191 90
Received on salary	225 00
Due on salary February 1st, 1892	75 00
	$491 90

TREASURER'S REPORT.

To the officers and members of the Wisconsin State Horticultural Society:

Your treasurer submits the following report:

Feb. 3, 1891.	Amount in treasury	$238 72
Feb. 6, 1891.	Received of state treasurer	500 00
Feb. 7, 1891.	Received of secretary, membership dues	44 00
March 16, 1891.	Received of secretary, membership dues	13 00
June 22, 1891.	Received of state treasurer	500 00
June 25, 1891.	Received of secretary, membership dues	7 00
Jan. 30, 1892.	Received of secretary, membership dues	10 00
	Total from all sources	$1,312 72
	Total disbursement	$1,067 14
	Amount on hand	245 58
		$1,312 72

Respectfully submitted,

VIE H. CAMPBELL,
Treasurer.

February 2, 1892.

DISBURSEMENTS.

Voucher.		
No. 57.	Smith, I. M., incidental expenses	$25 00
58.	Jeffrey, Geo., premiums at winter meeting	14 00
59.	Hirschinger, Chas., premiums at winter meeting	15 00
60.	Hatch, A. L., premiums at winter meeting	14 00
61.	Gale, Isaac & Son, premiums at winter meeting	2 00
62.	Chappel, F. H., premium	50
63.	Waupaca Co. Horticultural Society, premiums	10 50
64.	Edwards, J. M., expenses to winter meeting	5 24
65.	Hatch, C. A., premium	1 50
66.	Thayer, M. A., expenses of experimental station	34 74
67.	Harden, Fred., expenses of experimental station	32 10
68.	Hatch, A. L., expenses of experimental station	5 65
69.	Bendixen, J., expenses to annual meeting	5 00
70.	Barnes, A. D., expenses to annual meeting	5 00
71.	Hoxie, B. S., salary and expenses	97 96
72.	Phoenix, F. K., expenses to annual meeting	4 00

No. 73.	Kellogg, Geo. J., expenses to annual meeting, and as delegate to Minn. Horticultural Society	$21 98
74.	Tilson, Mrs. Ida E., expenses to annual meeting	4 88
75.	Hoyt, Chas., services as watchman	6 00
76.	Hoxie, B. S., miscellaneous expenses	9 78
77.	Dickson, A. M., hotel bills	37 63
78.	Campbell, Vie H., incidental expenses for 1890	5 00
79.	Hirschinger, Chas., expenses to annual meeting	5 00
80.	Livingstone, J. W., expenses to annual meeting	3 00
81.	Tilson, Mrs. Ida E., expenses to Baraboo meeting	5 35
82.	Kellogg, Geo. J., expenses to South Wayne	2 81
83.	Hoxie, B. S., expenses for the Society	28 10
84.	Coe, R. J., expenses to South Wayne	9 58
85.	Kellogg, Geo. J. expenses to Darlington	$3 98
86.	Campbell, V. H., expenses to Waupaca	4 23
87.	Hoxie, B. S., one quarter salary	75 00
88.	Hoxie, B. S., incidental expenses	51 60
89.	Campbell, Vie H., reporting and transcribing minutes of annual meeting	15 00
90.	Hanchett, Wm. H., expenses as delegate to summer meeting	3 70
91.	Winslow, A. A., expenses as delegate	8 46
92.	Kellogg, L. G., expenses as delegate	8 70
93.	Robbins, Geo. H., expenses as delegate	9 56
94.	Barnes, A. D., expenses as delegate	9 40
95.	Buswell, S. N., expenses as delegate	8 32
96.	Hindel, S. W., expenses as delegate	7 70
97.	Coleman, Prof. J. E., expenses as delegate	6 44
98.	Kellogg, Geo. J., expenses as delegate	1 08
99.	Hatch, A. L., expenses as delegate	4 50
100.	Toole, Wm., expenses as delegate	2 50
1.	Converse, D. C., expenses as delegate	9 50
2.	Springer, Wm. A., expenses as delegate	10 36
3.	Thayer, M. A., premium	1 00
4.	Toole, Wm. premiums	5 00
5.	Brinkman, Mrs. Florence, premium	1 00
6.	Smith, C. W., premiums	1 50
7.	Smith, Noyce, premium	1 00
8.	Metcalf, Mrs. M., premium	1 00
9.	Kellogg, Geo. J., premiums	11 50
10.	Crosby, P., premiums	2 00
11.	Loudon, F. W., premiums	5 00
12.	Coe and Converse, premiums	2 00
13.	Thayer, M. A., premiums	3 50
14.	Kellogg, L. G., premium	1 00

No. 15.	Herwig, C., premium	$1 50
16.	Borst, Herman, premium	1 00
17.	Hanchett, Geo. & Son, premiums	2 00
18.	Brinkman, Mrs. Florence A., expenses to summer meeting	4 86
19.	Goff, Prof. E. S., expenses to summer meeting	6 28
20.	Hoxie, B. S., expenses to summer meeting	6 88
21.	Campbell, Vie H., expenses to summer meeting and payment of hotel bill of delegates	13 14
22.	Hoxie, B. S., expenses to Appleton	8 72
23.	Hoxie, B. S., current expenses per account	40 41
24.	Hoxie, B. S., one quarter salary	75 00
25.	Goff, Prof. E. S, expenses as delegate to American Pomological Society	32 12
26.	Hoxie, B. S., postage, express and incidentals	27 10
27.	Hoxie, B. S., one quarter salary	75 00
28.	Budd, J. L., nursery stock for experimental station	16 80
29.	Huntley, D., expenses to Shiocton	2 30
30.	Hoxie, B. S., expenses to Shiocton	11 30
31.	Hoxie, B. S., printing, postage and express charges	35 00
32.	Campbell, Vie H., reporting and transcribing minutes of summer meeting	15 00
	Total disbursements to February 2, 1892	$1,067 14
	Amount on hand February 2, 1892	245 58

VIE H. CAMPBELL,
Treasurer.

The reports of secretary and treasurer, with vouchers, were referred to the Finance committee.

The election of officers was next in order and the following officers were elected for the ensuing year:

M. A. Thayer, president, Sparta.

L. G. Kellogg, vice-president, Ripon.

B. S. Hoxie, secretary, Evansville.

Vie H Campbell, treasurer, Evansville.

Carl H. Potter, corresponding secretary, Madison.

Additional members of the executive committee: Henry Tarrant, Janesville; Geo. H. Robbins, Platteville: Daniel Huntley, Appleton; Daniel Williams, Summit; Franklin Johnson, Baraboo; Prof. E. S. Goff, Madison; W. D. Barnes, Shiocton; A. M. Ten Eyke, Brodhead; William Ingalls, Fond du Lac; J. L. Herbst, Sparta; W. S. Braddock, Mather.

PRESIDENT THAYER — We will now take up the subjects as arranged on program.

SEEDLING APPLES.

By M. B. JOHNSTON, Appleton, Wis.

In the earlier days of Wisconsin the grafted fruit trees were a success. Later, however, they seem to be losing strength, and are becoming a failure as to hardy varieties.

To be sure, we still have success with grafted trees to a certain extent; but there being so many failures a great many of our planters have become discouraged.

In life, when one thing does not satisfy, and becomes partially exhausted, attention is at once turned to introduce something for improvement.

The same it must be in everything, so now the apple question is, "From what source are we to get our hardy varieties?"

In thinking of an answer to this, the thought comes to my mind. "What can be more satisfactory than nature itself?" It stands all tests; and man can not shake its foundation. So why not give more attention to the seedling for propagation? At present we do not know the value of the seedling. I think the reason is because we have not put forth sufficient efforts to sift out their true value.

In several cases of which I know, the seedling has proven to be very hardy, as well as productive. A friend of mine has a seedling tree on his farm, that was planted in the year 1851, and he says "It has borne fruit every year since its first production." This tree is of immense size, measuring 2½ ft. in diameter at a foot and a half from the ground; and its top branches out to the extent of forty feet.

This tree was at one time split partially open by a severe storm; and my friend braced it up by putting a bolt through it. The tree grew together and now the bolt is entirely hidden from sight by the growth of the tree. This certainly shows the hardiness of that seedling.

And now coming to my own experience. In 1852 I set out an orchard of grafted trees, and while some did well, others died out. So in 1858 I bought out a small nursery of three year old seedlings, to supply the deficiencies. Many of these were fit for nothing but cider, while others proved very successful, for many are now standing and are doing well.

I now have several of these old trees in my orchard, whose fruit is delicious and they are still thrifty and productive. One is a sweet apple I consider very valuable; last year it produced over twenty bushels of fruit. It is a fall apple but will keep well until early winter. I also have a few winter seedlings which I deem worthy of propagation.

Mr. E. Nye, of Freedom, has a row of seedling crab apple trees about four rods long. They stand where the seeds were planted and are so thick that a hen would have hard work to get through between them. They have been planted about fifteen years, and have been bearing more or less for the last six or eight years. There is an average of about twenty distinct varieties. Several of them, he considers superior in quality to any crab apple he has ever seen.

Mr. Nye has given no names to any of his trees, neither has he propagated any of them, but he has an abundance of choice crabs for home use and has no ocasion to buy crab apple trees. He neither prunes nor cultivates his "Wild Row."

Mr. L. L. Randall, of Appleton, has been experimenting with seedlings with very gratifying success.

Mr. Philips interviewed Mr. Randall this winter, and can tell you more of the work he has been doing than I can.

HARDINESS VERSUS QUALITY.

By J. WAKEFIELD, Fremont.

"Whom the gods love die young." That, we believe, was a heathen sentiment, but, pagan or Christian, it was inspiration, and is just as true to-day as when first uttered. Frail and uncertain are the most desirable things of earth, while much that we don't hanker after comes early and stays late. What we love the gods love, and what we hate is seldom wanted anywhere else. Youth, beauty, human friendship, and often love, are short-lived, while coarseness, ugliness and much that is unsympathetic, or even repulsive, crowd us on every side. Who ever had a cherished pet that lived half its time? While some miserable brute whose chief ambition is to make "night hideous," never dies. As with humans and animals, so with the vegetable world. The useful, the ornamental, and desirable, generally claim our especial care and solicitude, while the reverse will flourish in spite of our neglect. A stalk of corn must be cared for continually, and a choice flower is a failure unless tenderly nursed. But who can kill a thistle, that dread of boyhood, by treading on it, or a pig-weed by letting it alone? Compel a pig-weed to be useful, and it would become unhealthy at once.

Talk about the gifts of nature: Nature seldom gives. She will have an equivalent for all her favors. We must work for what we have. It has always been so, and will be, until humanity gets rid of the "curse." But labor is not the worst part of the curse. There was a time when laziness did not mean rags and empty stomachs. But that was before the "fall," when food was plenty, and clothing so cheap. Now it is work, starve, beg, or steal. As a general rule the best cost most, and are the hardest to keep, while that which can be had for the mere asking, often proves but a poor investment. Take the apple — and that is about the only kind of large fruit that we try to cultivate — except pumpkins. Show us an apple that may be eaten without an inclination to make unpleasant remarks, and we will show you one that requires extra care and nursing. An "iron clad" apple must have an iron clad flavor. Quality must be sacrificed to hardiness every time. We should acknowledge that fact and quit our vain striving for the impossible.

If we *must* have fruit possessing the hardness of the crab, we must quit looking for the flavor of the peach. There is no use in getting crankey over the notion that we can somehow combine both qualities in the same specimen. It will never be done with our present limited knowledge of horticulture. Instead of wasting our time, brains and money in trying to develope that "perfect apple," we should try to discover some way to protect what valuable kinds we already have. Let "protection" be our watchword. We have no reference to the "McKinley Bill." We have good varieties already—varieties that we can almost fancy. Let us try to save the best of them. Let us be done with trying to originate new varieties.

Before concluding we will say, that we believe we can raise apples, at least in southern and central Wisconsin—if we only manage right. But how? By protecting our trees in winter, spring and perhaps summer. What kind of protection? That should be *the* question with us, and one that we must be able to answer, or depend upon our Michigan neighbors to supply us with desirable fruit. One kind of protection we think would do for winter, build a diminutive house over each tree and make it frost proof or keep a heated stove in it. There might be objections to our plan on the score of economy—some people are always economizing. But that is the surest plan we can think of. If some other inquisitive genius can study out something better, all right, we are with him -- until he proves himself a bigger fool than we are.

But, winter or spring, we fully believe that the mere protection of the trunk is not all that is needed. The whole top, and especially the tender growth of the previous season must be protected from our merciless arctic winds. But, you say, impossible. That would be entailing too much trouble and expense, perhaps. But you will remember our proposition. We must labor for what desirable things nature lets us have. If we prefer what costs us nothing, we can take it, but must not grumble on account of the poor quality of the article.

Let us not be discouraged, but keep on hoping — keep on trying, keep on growing wiser. The lessons of the past need not be forgotten. We may see where we erred, and profit by each error. It is not foolishness to err, but wilful persistence in error is worse than folly. Wise men err as well as fools, but the fools are the ones who stick to it. We may blunder once, twice, a score of times. But our last effort may be a glorious success. That should encourage us to keep on trying. We may yet discover a way to do it. Our people are continually making discoveries. Even new principles are occasionally developed. Many things that half a century ago were deemed contrary to the natural laws, are perfectly feasible now, and so easily demonstrated.

We are done with wondering, with ridicule, with doubt. No matter how ridiculous the pretensions, we keep silent, and wait. If a man should tell us that he had devised a plan whereby he could converse with the man in the moon, we would not call him a fool or a fraud, but would give him a chance. Or if he should assert that he had discovered a way to regulate the moisture in the atmosphere, we would check our doubts, and tell him to go ahead with his sprinkling.

Who can measure the human intellect? Compared with Diety man is less than a pigmy, but measured by anything earthly he becomes more than a giant. His powers are not yet fully developed — never will be — not here. The past half century has done wonders towards their development. The future — we feel dazed when we try to anticipate man's glorious future.

DISCUSSION.

PROF. E. S. GOFF — I have enjoyed the last paper very much, and yet I am opposed to any such statements going on record as the sentiment of this society. It is not the fact that it is necessary, in order to have hardiness, that we must lose quality. Sometimes we lose in quality what we gain in size, but we must not regard this as a law.

SECRETARY — Taking the paper as a bit of pleasantry I enjoyed it, but there are two or three things that I would object to. I have seen fruit grown in the northern part of our state of good quality and hardy, and I do not believe that hardiness is gained at the expense of quality.

J. C. PLUMB — I would be loth to exchange words with Prof. Goff or the Secretary. There is a difference of a visible character in the quality of our fruits and the hardiest development of the tree. I find our best scientists, Thomas Mehan, for instance, said in all the vegetable kingdom the finest, both fruits and flowers, are of the most delicate kind. Prof. Goff cites the Fameuse apple, it is a nice, delicate apple after it is matured, but it is not a hardy apple by any means; it cannot be grown north.

J. WAKEFIELD — It is sometimes very hard for us to "face the music," but the position I took is the one you have got to come to after all.

Where did our crab-apple come from? We know when every thing was created that God pronounced it good. He would not call the crab good now. Where did it get its crabbiness? It came from the severity of the climate. They did not have severe climate in the early days, and they had good fruit. The crab-apple developed its crabbed qualities by its gain of hardiness. I expect, if I live long enough, I would hear Prof. Goff admit that I was about half right. I have always found that we get hardiness at the expense of quality. If we get a large and good apple we must find some way to protect it or else eat crabs.

A. G. TUTTLE — The early June has no equal in quality to any apples grown on this continent and it is hardy.

PROF. GOFF — In the most northerly orchards in the state, in a range with Dr. Hoskin's orchard in Vermont, the Famuese apple is doing nicely. We cannot lay down a law on this subject. We may have 1,000 seedlings and one good one in the 1,000, and we may have 1,000 good trees and only one hardy one; it is not a law but a question of mathematics as to how many seedlings you must have in order to get a good one and a hardy one.

A. J. PHILLIPS — We have three men with us who have had a large experience with fruit in other states, and while my fruit on the tables will not cut much of a figure, I move that they act as a committee on fruit.

Mr. Dartt objected, and the chair appointed J. S. Harris, Minnesota; C. G. Patten, Iowa and B. F. Ferris, Iowa, to examine the fruit on exhibition and make awards.

Adjourned.

EVENING SESSION.

Convention called to order by president.

The exercises were opened with several choice selections by the University Glee Club, when the regular programme was resumed.

THE GROWTH AND PROGRESS OF THE VINEYARD IN THE UNITED STATES.

BY WM. FOX, Baraboo, Wis.

I wish to present to you during the short time set apart for me to speak, a few substantial facts concerning the history, extent and culture of the grapevine.

Perhaps it is well for us to review the past events leading up to our present standpoint, in order that we may be better able to outline the future progress of this growing husbandry.

The Bible mentions incidents whereby we may remark that the Israelites were familiar with the vine and its products. Then, too, we find the noble Roman planting a vineyard upon the banks of the River Rhine, near Teinesheim, in western Europe, as early as 947 A. D.

During the reign of Charles the Great, several vineyards were planted in Baden and Wurtemburgh. The famous vineyard at Rudersheim and Johnsburg, noted for the fine quality of wine produced, was established in the year 1200. The Duke of Portland, about the year 1600, presented the Marquis of Rockingham with a bunch of grapes that weighed 19 pounds. This bunch was grown at one of the vineyards at Welbeck.

In our country the wild grapevine was a familiar landmark to the dusky son of the forest. Four centuries have passed away since the westward march of man began, and from out the numerous products of this fertile soil we still find the vineyard deserving of honorable mention.

Permit me to quote from the United States Agricultural report for 1890:

TABLE.

Total acreage in United States	401,241
Value of land and plants	$155,661,150
Employ of help	260,780
Table grapes	967,271 tons
Raisins	41,166 tons
Dried grapes	23,252 tons
For wine	240,450 tons
No. of gallons of wine produced	24,306,905

State.	Acreage.	Value of land and plants.	Product, tons.	Value of product
Illinois	4,730	$1,482,000	7,500	$570,000
Indiana	4,850	1,455,000	6,647	580,000
Ohio	32,143	13,821,200	50,556	2,219,979
New York	51,000	20,400,000	75,809	5,512,215

Hence, it is well, that we possess sufficient knowledge of this ancient industry to render ourselves at least creditable workers in this great vineyard that has been giving us an inexhaustable inheritance; and in so doing, we must needs have ample knowledge of the fundamental principles of its beginning, its nature, its magnitude, its natural traits. Wisconsin possesses all the essential attributes for the successful culture of grapes, such as good location, rich soil, dry atmosphere and a fair market. Yet we want to see more ambitious and energetic men to take up this work, and advance the state of Wisconsin to the front as a grape growing state.

My statements will be brief concerning the selection, planting and care of the vines.

1. The location should be upon the hillside and facing south or southeast.

2. Soil should be rich.

3. The soil should be prepared for planting of the vines by ploughing deep and then harrowing well.

4. Such varieties of vines should be selected as will ripen early and bear plenty of fruit of good quality.

5. In planting the new vines, care should be taken not to let the roots get dry, the vines should be planted as deep as the stems will permit, leaving the bud just even with the top of the soil.

6. The vines should be planted in rows 10 feet by 13 feet so as to permit of plowing and cultivating; a high state of cultivation is absolutely necessary to the growing of fine fruit.

7. There are two systems of pruning. The spur and renewal. I would suggest, as a result of my own experience, a mean of the two systems above mentioned. The time for pruning should commence immediately after the leaves have fallen from the vines.

8. In November, it is necessary on account of our severe winters, to lay down the vines and cover them with a layer of straw.

I have not, Mr. President, in this paper advocated any method or mode of grape culture, nor have I recommended particular varieties of grape vines as especially adapted to the climate of Wisconsin; these statements will be forthcoming in the discussion.

We may consider the use of grapes still in the first stage but a small percentage of the community have learned to eat grapes. Yet in a little while the masses will have learned to use them, for table use and in various ways in the culinary department.

The grape will soon become a fixed necessity with the people at large, and our cities, or rather the growing cities will furnish a splendid market for the products of the vineyard.

My work is not completed, though I have labored long and faithfully to awaken the people on this great industry of the vineyard.

DISCUSSION.

J. M. SMITH — How far north, in our state, do you think we can grow grapes successfully?

WM. FOX — In the extreme northwestern part, by using good judgment, I think they can be grown successfully.

J. M. SMITH — Do you think we can get land too rich?

WM. FOX — No, sir; I fear most the old teaching, "put a vine anywhere and it will grow."

J. M. SMITH — Some of my land is excessively rich and on part of that land I have Rogers' No. 3; they made great growth but bore lightly and I was afraid I had manured too heavily.

WM. FOX — The Rogers' Hydrids do best on sandy, light soil. If I had rich land I would grow the Lady. If my soil was sandy I would use a good deal of wood ashes and keep the soil up as well.

B. F. FERRIS — What kind of fertilization do you recommend?

WM. FOX — With the right kind of soil you can use good horse manure. If I had soil like Mr. Smith's I would use ashes. We on the Rhine put on manure every fall; that is why we can keep our vineyards up for 500 years; we do not have to plant out every few years.

J. S. HARRIS — How deep do you recommend planting? You said as deep as the stem would permit. I have seen vines that had stems you could put down eighteen feet, and I do not think you would want the roots so far from the surface.

WM. FOX — I would take a cutting from six to nine inches and plant it.

PRESIDENT — Will you tell how you treat a grape vine for the first three years?

WM. FOX — I think I could stand right here three years and state the same thing as I stated it three years ago, and the next year I could state the same thing. Clay soils need more care than sandy loam because those soils often bake. If I was going to lay out a two or a ten acre vineyard I would get it in the shape of a perfect square. I get one man with a ten or twelve foot pole, as he may want to set it. I lay my roots all one way, I lay them in on a slant. I like a little good rich soil to touch the roots at first, then fill up around them. I let only two buds remain on a new vine, if you have good soil two buds will do to grow. I encourage that vine to grow and in the fall, my soil being rich, I have two vines, I cut away one and let the other grow. I cover it up and the last of April or first of May I uncover it and plow the land. (I have practiced raising potatoes among the grapes for a years or two but I think I shall not follow it up). If that vine bears three new canes I let them grow. I seldom cut one of them away. In the fall I let one or two stand. I have some vines that I have eight canes on one vine and some with only two, just according to the strength of the vine; you can cut away easier than you can put them on again. I put the roots all one way when I set them out and then when they are plowed I tell the man to hold the plow up a little.

J. S. **HARRIS** — Will you tell us the three best, most profitable black grapes for market?

WM. FOX — I presume they are Moore's Early, Worden and Concord.

J. S. **HARRIS** — I guess you are right, now give us the three red ones for the same purpose.

WM. FOX — I do not know of a red one that returns so much money as the black. The Deleware is a good one and so is the Brighton, the Brighton will yield more. I have thirty kinds of white grapes. I have fooled with the white grapes since 1886 and there is not one to-day that has given me universal satisfaction.

J. M. **SMITH** — What do you think of the Ulster's Prolific?

WM. FOX — It is a fine little red grape and I think it would do for you, Mr. Smith. I sold fifty vines to Mr. Toole and I was very sorry when I knew he had only put the vines in two or three inches deep, there is an awful mischief done in shallow planting.

A. I. **GALE** — If you had a white grape that bore as well as the Worden would you plant it?

WM. FOX — Yes, sir: If I had as good a white grape as the Worden I would plant it. Any grape that ripens after the tenth of September is not safe to plant.

WARREN GRAY — What is the matter with the Wyoming Red?

WM. FOX — It is a good variety.

A. L **HATCH** — You said in covering that you covered with straw and soil. Do you use straw and soil together?

WM. FOX — Yes, I put on straw after I lay down the vine and then cover with soil, you can lay them down nicely with straw. I have ten acres now and I do not believe I have had one half dozen vines hurt by mice. I do not advocate laying down before November. If it has frozen you must use a little care lest the vines crack. I have one man carry straw and another follow with the spade and while the first one holds down with his foot the other covers.

A. L. **HATCH** — You speak very strongly of good culture and high soils, did you ever have any test of the fertility?

A. — No.

A. L. **HATCH** — With the Catawba it used to be advodated to trench and fill with manure but Prof. Goff says they find now that grapes do better on poorer soil.

WM. FOX — I would naturally believe in keeping the land up.

A. L. **HATCH** — When I hear you talk about it I feel as though I might be all wrong, and still I have seen grapes that had done well on land for eighteen years. They have been very fruitful on land where much of the soil had been washed away.

WM. FOX — My father used to say, "sometimes the blind sow finds acorns in the woods," and I might say the same about grapes, you may get some on very poor soil but it is not the rule.

J. S. **HARRIS** — I've no doubt that Mr. Hatch's soil is as rich in some qualities as Mr. Smith's is in certain other qualities. The grapes may be getting fertilizers, and just what they need even if manure is not used.

A. L. **HATCH** — I would like to ask Prof. Goff about the New York method.

PROF. GOFF — Years ago when we first began raising grapes we were advised deep trenching, putting manure, old shoes, etc., at the roots, now it is considered unnecessary. It is considered more desirable with them now that land should be perfectly drained than highly fertilized.

WM. FOX — My argument has always been to raise a moderate amount of wood and a moderate amount of fruit.

PROF. GOFF — Then you find in proportion as your wood increases your fruit decreases, do you?

A. Certainly, but the growth of wood is one of the things we can check.

MR. PHILLIPS' TREE PROTECTOR.

BY E. S. GOFF, Experiment Station, Madison.

Wisconsin orchardists are pretty well agreed that some method of protecting the trunks of apple trees against the unbroken rays of the sun is a necessity, though there are differences of opinion as to the best means of securing this protection. The method described in this article has been well tested in different parts of our state, and if not the best known is certainly a good, cheap and reliable trunk protector. It is made of common lath, held together by two or three double strands of wire, as shown in the drawings.

The first drawing shows the protector in position about an apple tree. The second one shows a convenient and rapid method of making the protector. The laths may be cut either two or three feet long, according to the height of the trunks of the trees for which they are intended. For very tall trunks, they may be left full length. Seven or eight laths are sufficient for one protector. The wire used is about No. 18 in size and may be of iron, brass or copper. The latter two are more durable than iron, but their greater cost may overbalance this advantage.

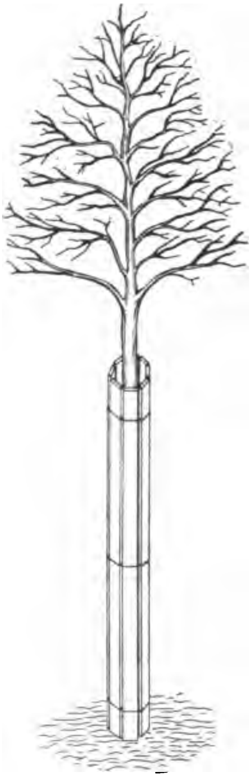


Fig. 1.

As a rapid means of measuring off the wire, it may be wound lengthwise about a piece of board eighteen inches long for an eight lath protector, or sixteen and a half inches if seven laths are to be used. The wires may then be cut at one end of the board with the cold chisel or tinner's shears. The protectors may be rapidly put together on a common work bench by means of the simple devise shown in the second drawing. Procure a piece of strong elastic wood about four feet long, and three-fourths inch thick, to serve as a spring shown at the upper part of the drawing. Then tack two blocks to the top of the bench near the rear side to serve as a support for the spring. Now drive three nails into the bench near the front side, at the distance apart at which the wires are to be placed on the protector. The end wires should be about three inches from the end of the laths. Next twist the ends of the wires together for a short distance, beginning about three inches from the end, and place one of the wires about each of the nails in the front of the bench, as shown, and place another shorter wire, having the ends bent into hooks, about the outer end of the spring, and slip the first lath through the four wires, as shown in the drawing, bending the spring sufficiently to make this possible. The spring now acts as a tension to keep the wires taut. Then insert the second lath, lifting up the lower strand of the wire and slipping the lath beneath that, and over the other strand, thus crossing the two strands. Then with a hammer gently drive up the second lath toward the first until the two are about one-fourth of an inch apart. Insert the other lath in the same manner, after which unhook the wire connecting the spring with the first lath and loosen it from the protector.

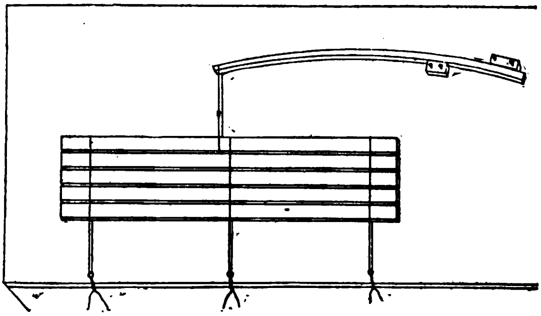


Fig. 2.

In placing the protector about the tree, simply bend it around and insert the free ends of the wires beneath the wire of the first or second lath, clinching it enough to hold securely. The protector is to be left on summer and winter, until the tree outgrows it, or the wires rust off. The protector not only prevents sun-scald on the trunk, but is an effectual preventive against injury from rabbits and other rodents, as well as from whiffletrees used in cultivation.

This form of tree protector was invented and first used by Mr. A. J. Phillips, of West Salem, Wis.

SPRAYING.

By A. H. NIXON, Dayton, Ohio.

(Mr. Nixon being unable to be present his paper was read by the secretary.)

Mr. President and Members of the Wisconsin Horticultural Society: I thank you kindly for your invitation to be present and deliver a short talk on "Spraying," and deeply regret that continued illness has prevented my attending. I respectfully submit the following brief essay on "spraying," to the assembly, and beg the volunteer reader to also accept my thanks:

"Spraying has come to stay." The government and state experiment stations have spent hundreds of thousands of dollars to establish the truthfulness of this one little sentence, and these authorities have the thanks, to which they are justly entitled, of the agricultural community for their thorough work in this direction. Aggressive measures must be adopted to protect their crops, and the service of the scientists, the knowledge of entomologists and chemists, have all been employed to experiment with and compound the various sprays, washes, emulsions, and other fluids poisonous or destructive to insect and fungus life.

Next comes the work of the experimental and scientific machinist to furnish the apparatus for distributing these liquid destroyers on the growing plant. This has taken years of scientific experimenting, based on the needs and requirements of perfect work. That this has been accomplished there is no longer any room for doubt, and spraying to prevent the ravages of insects and fungi on fruit and vegetable crops will pay big returns in dollars and cents, and the best source for reliable and unbiased information is from the bulletins of the various experiment stations. These are distributed free.

To spray judiciously, care must be taken to distribute the poison evenly. The nozzle should throw a spray of the density of fog, and this with sufficient force to penetrate foliage and evenly deposit the liquid over all portions intended to be reached. The pump should be of a capacity that will furnish a continuous stream, of sufficient force and evenness that the nozzle may accomplish its work. With a good outfit of pump and nozzle and careful and judicious management, there is no doubt of success. The most important thing is to have the spraying outfit and be ready to combat the insect and fungus growth when it first appears.

"To be prepared is the battle begun,
To nip the enemy in the bud is the battle done."

The delay of even a few days will make a loss that very often amounts to four or five times the original price of outfit. The value of spraying to protect fruit against disease is very nicely shown by the following contribution that recently appeared in the *Farmers' Review:*

"A grape grower in Delaware, having twelve hundred vines, gathered in 1888 about 240 pounds of grapes and stems — mostly stems. Then he began to spray, and the following year shipped over 3,000 pounds of fruit; the next year his crop was increased to 8,000 pounds. This year he reports that he has found five rotten grapes, and expects his crop to equal 12,000 pounds."

It would hardly be worth while to tell that man that spraying does not pay. And it will pay equally as well in protecting other fruits, both from disease and from insect enemies. The fruit grower who expects to reap the best success in the future must regard the spraying machine as part of his regular equipment, and what is more, he must use it.

Now is to the time to spray. The government, leading fruit and grape growers, and scientists who have studied the subject, are unanimous in saying that the first spraying should be done when the fruit is in blossom or going out; the second spraying should be after the blossom has fallen and the fruit has fairly formed and the little cup (calyx) end stands erect, and again in about ten days, to get the later-hatching insets. If excessive rains follow the application, it might be well to repeat the spraying at once.

How perfectly fruit may be protected from the codling moth by spraying is told in the New York *Tribune* by Waldo F. Brown, who, with his usual keenness for actual results, has put spraying to a comparative test. He says: "Recently I saw two trays of apples, each containing 100. The fruit on one tray was taken from a tree which had been sprayed, and the other from an unsprayed tree adjoining, the apples in both cases being taken as they grew, without assorting. The apples in each tray were divided into three grades — first, second and third — No. 1 being entirely free from worm holes and knots, No. 2 having one or two blemishes, and No. 3 being so small and knotty as to be worthless. In the tray occupied by apples from the unsprayed tree, there were four first class apples, 58 second class and 38 culls. In the tray containing fruit from the sprayed tree, there were 84 perfect apples, 9 second class and 7 culls."

These practical results are proof conclusive of the value and necessity of practical spraying, and the day is not far distant when it will be universally practiced, and the spraying outfit will be as essential to the fruit and vegetable grower as the hoe and plow to the farmer.

I desire to say in conclusion that you have my best wishes for the welfare of your Society.

PROF. GOFF — There is one point that I think will bear criticism, that is where he speaks of spraying while the tree is in blossom. I should rather say, just after the petals have fallen, or are going out of blossom. To spray while the tree was in blossom would have a tendency to destroy the pollen and to kill the bees that are feeding on the blossoms.

SECRETARY — I think we cannot too strongly emphasize the point made by Prof. Goff. Prof. Cook has come to the rescue of the fruit growers in counteracting the report that went out that the fruit was being poisoned by spraying, although it takes longer to chase up a lie than the truth.

WM. FOX—Did you ever use liquid ammonia for spraying purposes? You need to use the Bordeaux mixture for your vineyard do you not?

A.— We had some good results and some indications of good results.

J. S. HARRIS — Have you ever found anything that would save us from the apple gouger?

A. L. HATCH — The apple gouger is a member of the curculio family. Prof. Weed thinks it can be successfully destroyed by spraying.

J. S. HARRIS--I only tried it on a few trees, and I had less fruit on the trees I tried it on than on the others. I think the arsenical poison did not affect the insect.

E. H. S. DARTT--I have sprayed some and I used one pound of Paris green to 160 gallons water. I am satisfied it did not do any harm, and, maybe, not any good. I hope you will explain just how to spray with Paris green and London purple.

A. L. HATCH — I used one pound London purple to 200 gallons of water. It took me two years to learn to spray early enough, and I had to learn that I did not have the mixture strong enough. Next year I shall use one pound to 100 gallons of water. Use liquid lime with your mixture and keep it well stirred. A spraying solution ought to be a perfect solution, but we have not got it yet.

E. H. S. DARTT — Is it safe to use as much Paris green as you do London purple?

A. L. HATCH—As a rule it is safer because a less amount is soluble. When I was spraying, people going by would say it looked like smoke. It was pretty finely distributed. It would take a man an hour to pump out fifty gallons.

SECRETARY — I would like to ask Prof. Goff to prepare a formula to be published in our next volume.

PROF. GOFF--Apple curculio is a difficult insect to manage. I think if Mr. Harris had a hen and chickens under his trees he would have had better luck with his spraying. The plum gouger and curculio are very different insects.

Q. Do you think the curculio can be destroyed by spraying?

Some of them can be.

Q. Then you would not spray for the curculio?

No, I think it is increasing.

GEO. J. KELLOGG--I was troubled very much with one-sided gnarled apples. I used to exhibit them at the fairs because I did not believe any one knew anything about it. I sent a lot of them to Prof. Cook, and he said it was the plum curculio.

Prof. Goff—It is well known that the plum curculio does injure the apple.

Daniel Williams—I have found out that a mulch of sand is one of the best things for my orchard. I found it out accidentally, and some of the trees that were not doing well before I applied it made good growth afterward.

Henry Tarrant—I have not done as well perhaps as I might have done, but we have a good deal of fruit. We have not been troubled with insects very much. We had something that seemed like the gouger but that went off and we have not been troubled with it lately. So far I am very well satisfied with what I have done. I have the Malinda; they have borne a number of barrels this year. We have them in the cellar now and they are a very nice apple. They are a seedling fruit and the tree shows it.

J. S. **Harris**--How old has the Malinda to be before it begins to fruit?

A. I think about ten years.

E. H. S. **Dartt**—A tree that is a long time coming into bearing is usually a tree that bears a long time.

E. S. Goff, professor of Horticulture, State University, Madison, Wis., has furnished the following:

INSECTICIDES USED IN SPRAYING.

By Clarence M. Weed.

The insecticides used in spraying may be broadly divided into two classes; (1) internal poisons, or those which take effect by being eaten along with the ordinary food of the insect; and (2), external irritants, or those which act from the outside, closing the breathing pores, or causing death by irritation of the skin. The most important insecticides are the poisons. Of these the most popular are the various combinations of arsenic, known as Paris green, London purple, slug shot, etc.

Paris green is a chemical combination of arsenic and copper, called arsenite of copper. It contains about 55 or 60 per cent. of arsenic, and is almost insoluble in water; but there is often a small per centage of it soluble, and to prevent the injury this may do to foliage, it pays to add a little fresh lime water (made by slaking fresh lime in water) to the spraying mixture.

It may be used in spraying potatoes, apple trees and most shade trees, at the rate of four ounces to fifty gallons of water. On stone fruits, especially peach, use half this strength, unless lime is added. Paris green is a heavy powder and does not stay long in suspension; hence it must be kept constantly stirred to prevent its settling to the bottom of the vessel.

London purple is a by-product obtained in the manufacture of aniline dyes. It generally contains nearly the same percentage of arsenic as Paris green; but the arsenic is often in a more soluble form and hence, London purple is more likely to injure foliage than Paris green, unless lime is added. It is a finer powder than the green, and hence remains in suspension in water much longer. It is also cheaper, retailing at about fifteen cents per pound. Before using, the soluble arsenic should be made insoluble by the addition of lime water. One of the best ways to do this is to add three-fourths of a pound of lime to a pound of London purple, and thoroughly mix them in a gallon of hot water, allowing the mixture to stand two hours and keeping it hot during this time if it can be conveniently done. In this way the soluble arsenic will be rendered insoluble, and the London purple may be used at the rate of four or five ounces to a barrel of water. Or if this method is not practicable the London purple may be added to the water as usual, and about two gallons of fresh milk of lime (made by slacking lime in water), strained into the barrel. If allowed to stand an hour, all the soluble arsenic is more likely to be rendered insoluble than if used at once. After London purple has been thus treated with lime it can safely be applied even to such tender foliage as the peach, at a strength of four ounces to fifty gallons of water. Both London purple and Paris green may be added to the Bordeaux mixture (4 oz. poison to 50 gallons mixture), and then the treatment with lime is not necessary.

Hellebore is a powder made of the roots of white hellebore. It is a vegetable poison, but much less dangerous than the mineral, arsenical poisons, and kills both by contact and by being eaten. It may be applied in water, 1 oz. to three gallons, or one pound to a barrel. It is especially excellent in destroying the imported currant worm.

Pyrethrum, or insect powder, is made from the powdered flowers of plants of the genus pyrethrum. There are three principal brands upon the market, known as Persian Insect powder, Dalmation insect powder and Bubach — the latter being a California product. The greatest obstacle to the use of pyrethrum has been the difficulty in obtaining the pure, fresh article. After long exposure to air it loses much of its insecticidal value. Pyrethrum is used mainly as a dry powder or in water (1 ounce to 3 gallons); but may also be used in the form of tea, or a decoction, a fume, or an alcoholic extract diluted.

Kerosene emulsion.— There are two methods of preparing this in common use; one originating with Messrs. Riley and Hubbard, and the other with Prof. A. J. Cook. Both have their advocates. According to the former it is prepared by adding two gallons of kerosene to one gallon of a solution made by dissolving one-half pound of hard soap in one gallon of boiling water, and churning the mixture, by forcing it back into the same vessel through a force-pump with a rather small nozzle, until the whole forms a creamy mass, which will thicken into a jelly-like substance on cooling. The soap solution should be hot when the kerosene is added, but of course must not be near a fire. The emulsion thus made is to be diluted before using, with nine or ten gallons of cold water. Soft water should be used in diluting. If this cannot be obtained, prepare according to one of the following methods. Professor Cook has two formulas, one where soft soap is used and the other for hard soap. He describes them as follows:

Cook's Soft Soap Emulsion.— Dissolve one quart of soft soap in two quarts of boiling water. Remove from fire and while still boiling hot add one pint of kerosene and immediately agitate with pump as described above. In two or three minutes the emulsion will be perfect. This should be diluted by adding an equal amount of water, when it is ready for use. This always emulsifies readily with hard or soft water; always remains permanent, for years even; and is very easily diluted, even in the coldest weather and without any heating. In this last respect it has no equal, so far as we have experimented. The objections to it are: We cannot always procure the soft soap, though many farmers make it, and it is generally to be found in our markets. It occasionally injures the foliage, probably owing to the caustic properties of the soap. We have used this freely for years, and never saw any injury till the past season. In case of any such trouble, use only one-half the amount of soap — one pint instead of one quart. It works just as well.

Cook's Hard Soap Emulsion.— Dissolve one-fourth pound of hard soap, Ivory, Babbitt, Jaxon or whale oil, etc., in two quarts of water; add as before, one pint of kerosene and pump the mixture back into itself while hot. This always emulsifies at once and is permanent with hard as well as soft water. This is diluted with twice its bulk of water before use. The objection to a large amount of water sinks before the fact that this secures a sure and permanent emulsion even though diluted with hard water. This also becomes, with certain soaps, lumpy or stringy when cold, so that it cannot be readily diluted with cold water unless first heated. Yet this is true with all hard soap emulsions in case of certain soaps. We can, however, always dilute easily if we do so at once before our emulsion is cold, and we can also do the same either by heating our emulsion or diluent, no matter how long we wait.

Lime Spray.— This is made by slaking a half peck or a peck of fresh lime in water, straining the lumps out as it enters the barrel. By means of this and the spray-pump, trees and vines may be literally whitewashed. It is useful in mechanically coating plants so that certain insects will not molest them.

Tobacco Decoction.— This is made by boiling refuse tobacco stems, or dust, in water, or pouring boiling water over them. This gives a concentrated liquid which is to be diluted with cold water, until there are two gallons of water for each pound of tobacco used. It is a good remedy for plant lice.

Whale Oil Soap.— Dissolve in water at the rate of two ounces soap to one gallon water. This is good to destroy plant-lice, rose-slugs, etc.

FUNGICIDES USED IN SPRAYING.

The principal fungicides used in spraying are certain salts of copper, especially the sulphate of copper and the carbonate of copper. These substances were first experimented with on a large scale in France, and gave such satisfactory results that they were adopted in a practical way by many vineyardists. In America they have hardly been used for this purpose a decade; yet, thanks to the investigations and experiments of Messrs. Scribner, Galloway, Burrill, Pearson, Chester, Green, Garman, Kellerman, Swingle, Thaxter, High and others, their efficicacy is well attested and they are in practical use over a large territory. Their principle combinations are given below:

Bordeaux Mixture.— This fungicide originated in France, and has become one of the leading combinations of copper salts. Since its introduction into America there has been a constant tendency to dilute the mixture more and more. The results from the diluted mixtures have been apparently as good as from those of full strength, and of course the cost has been proportionately lessened. The different formulas are indicated below:

Original Formula.— Dissolve six pounds copper sulphate in one gallon hot water in an earthen or wooden vessel. In another vessel slake three pounds fresh lime in one gallon water. Strain the latter and add to twenty gallons water. Now pour in the dissolved copper sulphate and mix thoroughly, keep the mixture stirred while using.

Weed Formula.— In 1889, while at the Ohio Experiment Station, I experimented with potato blight by diluting this mixture a little more than half, using six pounds copper sulphate and four pounds lime to fifty gallons water, instead of twenty-two gallons. This was applied to number of plants besides potatoes, and apparently gave as good results as undiluted mixtures. The same formula was also successfully used in 1890.

Green Formula. — In 1891 Mr. W. J. Green, of the Ohio Experiment Station, used on apples, plums, pears, cherries, raspberries, etc., a still more dilute mixture, viz., four pounds copper sulphate and four pounds lime to fifty gallons water, and obtained very good results.

The cost of the copper sulphate in a barrel of this mixture is less than one third the cost of that in a barrel prepared according to the original formula.

A special formula of the Bordeaux mixture is, that London purple or Paris green can be added to it, making a combined insecticide and fungicide.

Care should be taken not to use the Bordeaux mixture on fruit crops too late in the season. Traces of it remain for some time, notwithstanding numerous rains and are liable to cause unnecessary suspicions when on marketed fruit.

When a fruit crop requires treatment within a month of the time of picking, it is better to substitute some fungicide like eau celeste or carbonate of copper, but it is doubtful if even these combinations should be applied so near the time of the fruit harvest, with nearly if not quite all our fruit diseases; treatment should begin early and not continue too late.

It sometimes happens that traces of Bordeaux mixture remain upon the fruit even when a considerable interval elapses between the last application and the ripening of the fruit.

Such traces may be easily removed by dipping in a solution made by adding two gallons cider vinegar to ten gallons water. A good way is to have three tubs, one holding the vinegar mixture and the other two pure water. Then place the grapes or other fruit in wire baskets holding fifteen to twenty pounds, dip them in the vinegar tub for five minutes and then rinse in the two tubs of clear water, afterwards spreading the fruit on frames or shelves, something like those used in fruit evaporators.

Grapes can be treated in this way on a large scale for six cents a hundred pounds and their appearance for the market is not injured to any appreciable extent.

Eau Celeste.— This is made by dissolving two pounds copper sulphate in two or three gallons of hot water in an earthen or wooden vessel (such as the large crocks used for butter, or wooden pails or tubs), then adding one quart of ammonia and mixing with fifty or sixty gallons of wate. It is the fungicide most generally employed against the Downy Mildew or Brown Rot in grapes.

Modified Eau Celeste.— Dissolve one pound sulphate of copper in hot water; in another vessel dissolve one and one fourth pounds sal soda in hot water; when cool mix the two solutions thoroughly then add one quart ammonia and dilute to twenty-five galons water.

Carbonate of Copper.— This is commonly used in the form of an ammoniacal solution made by dissolving four ounces carbonate of copper in two quarts of ammonia, and then adding it to a barrel of water. It is a simple fungicide, easy to make and apply, and as it is a clear solution there is no trouble with its clogging nozzles. It has been successfully used to prevent apple scab, various mildews, etc.

A combination of carbonate of copper and carbonate of ammonia, recommended by Prof. F. D. Chester as superior to the above, is made as follows: Mix together three ounces of carbonate of copper and one pound pulverized carbonate of ammonia. Dissolve this mixture in two quarts of hot water and add to fifty gallons water. A barrel of this mixture costs twelve cents. Professor Chester also reports good results from copper carbonate prepared as follows: "Thoroughly mix, in half a pail of water, one pound of carbonate of copper, to which is added three ounces of common glue dissolved in hot water, then dilute to twenty-five gallons." It would probably be better to dilute to fifty gallons.

Sulphate of Copper.— Besides its use in combination with other substance, copper sulphate is often applied to vines and trees early in spring to destroy the winter spores of fungi. For this purpose it is used in a simple sólution made by dissolving two pounds of copper sulphate in fifty gallons of water.

Galloway's Mixture No. 5 — Mr. B. T. Galloway lately announced that the best fungicide for apple scab and other diseases of pomaceous fruits, is a combination sent out by him in 1890, as Mixture No. 5. It consists of equal parts of ammoniated copper sulphate and amonium carbonate. It was used at the rate of eight to twelve ounces to twenty-five gallons water. The special advantage of this mixture are (1) cheapness; (2) ease of preparation and application; and (3) that it can be put up in dry form in small or large packages, making it easy and convenient to handle by the practical man in the field and the storekeeper who wishes to place it upon the market. The chief objection to it is that it sometimes burns the foliage. While this drawback may in time be overcome, it is necessary that we know of it in order that due care may be observed in using the solution.

Potassium Sulphide.--Dissolve one-half ounce of potassium sulphide (lime of sulphur) in one gallon of hot water. When cold apply in a spray. Used to prevent gooseberry mildew and similar diseases. Commercial liver of sulpbur costs fifteen to twenty cents per pound.

Soda Hyposulphite.—Dissolve one-half ounce or one ounce soda hyposulphite in ten gallons water. This is recommended by some for gooseberry dew and apple scab, but it is not in general use.

Caution.--Most of the copper compounds corrode tin and iron. Consequently, in preparing them for use, earthen, wooden or brass vessels should be employed; and in applying them the parts of the pump which come in contact with the liquid should be made of brass.

COMBINATION OF INSECTICIDES AND FUNGICIDES.

Soon after fungicides come into prominence in this country the writer called attention of so combining them with insecticides that both may be applied at the same time and in the same mixture. Before then entomologists had worked out remedies for insects, and botanists' remedies for plant diseases, but very little had been done in so combining the treatment that the practical man might, so to speak, "kill two birds with one stone." In the article referred to I said: "The necessity of treatment for both classes of injuries is at once apparent to all who have experienced the serious loss due to these agents. Obviously, it is of little use to save a plum crop from the curculio, if it is to be destroyed by the fungus disease known as fruit rot; to save raspberries from the slug if they are to be ruined by the anthracnose; to save the grape buds from the flea beetle if the berries are to be destroyed by the black rot; or to save a pear crop from the ravages of the coddling moth and curculio if it is to be distroyed and disfigured by the scab.

Or to take an example which will strike home to a large proportion of American farmers, it is scarcely worth while to save the potatoes from the Colorado beetle if they are to be ruined by a more serious enemy—the potato blight. While the necessity for preventing, so far as possible, injuries to both these classes of organisms is obvious, it is almost equally evident that there will be a great loss of time and labor if each is treated separately. For instance, the farmer who sprays his potatoes with the arsenites two or three times for the beetles, and then goes over them again with solutions of copper sulphate for the blight, would have accomplished the same end in half the time by mixing the copper sulphate and London purple or Paris green in one solution and applying them together. The same is true of the treatment of apples, pears, plums, and in fact, of a large proportion of the crops liable to injury by both insects and fungi."

Since the above was written a great many experiments along the lines indicated have been made, and we now have a number of satisfactory combinations. Chief among these are the following:

Bordeaux Mixture and Arsenites.—Add four ounces London purple or Paris green to fifty gallons of Bordeaux mixture made according to the Green or Weed formula. This is one of the very best combined insecticides and fungicides. It can be used safely and effectively upon a great variety of crops—such as potatoes for Colorado beetles and blight, apples and pears for insects and scab, and plums and peaches for curculio and leaf or fruit diseases. To use upon fruits the Green formula is probably the best, as too large an amount of copper sulphate occasionally prevents the perfect development of apples and pears. The remarks concerning late applications of the Bordeaux mixture are equally applicable to this combination.

Arsenites and Copper Carbonate.—The Ohio experiment station recommends the following combination: Paris green, 2 ounces; carbonate of copper, 2 ounces, dissolve in 3 pints of ammonia, add ½ pound lime and one barrel of water. It is advised that this be substituted for the arsenite and Bordeaux combination for the later spraying of apples, pears, plums, etc., so as to avoid the lime coating on the fruit.

Care must be taken in combining the arsenites with other fungicide solutions, as one is liable to produce a compound very injurious to the foliage. Paris green or London purple added to simple solution of copper sulphate, or to ammonia compounds without lime, injures foliage vastly more than in simple water mixture.

COST OF SPRAYING MATERIALS.

The average retail and wholesale price of the various materials used in the spraying mixtures above described is approximately indicated in the following table:

	Wholesale. Per lb.	Retail. Per lb.
Ammonia (22° Baume),	$0.07	$0.25
Carbonate of copper (Precipitated)	35	60
Carbonate of Ammonia	10	30
London purple	07	15 to 20
Paris green	18	30
Pyrethrum	22	40
Soda hyposulphite	09	20
Sal soda,	01¼	05
Sulphate of copper	06 to 07	10 to 12
White hellebore	12	25
Whale oil soap	08 to 10	15 to 20

REPORT OF FINANCE COMMITTEE.

MADISON, February 2, 1892.

Mr. President, and Members of Wisconsin State Horticultural Society:

Your Committee on Finance respectfully submit their report:

We have examined the books and vouchers of your treasurer and secretary and find them correct, as stated.

M. ANDERSON,
C. E. TOBEY,
A. L. HATCH,
J. M. EDWARDS.

Adjourned.

ONION CULTURE BY THE GOOD OLD WAY.

BY A. M. TEN EYCK, Brodhead, Wis.

There are few uses to which land can be put that will, under favorable conditions, give a larger money return per acre than that of growing onions, whether it be by "The Good Old Way," or by "The Better New Way," which my friend, Mr. Potter, will explain a little later. In the old way, i. e., growing from seed sown directly in the field, yields of from 500 to 1,000 bushels are sometimes harvested from a single acre, and in former years one dollar per bushel has not been infrequently obtained. The knowledge of such possibilities has often tempted farmers into the cultivation of this crop without due preparation, and without a proper knowledge of the requirements essential to success. The result has been not only a money loss, but such discouragement as has precluded further ventures. Onions are a difficult and expensive crop to grow, and during their early stages demand a great amount of steady and hard work that is most unpleasant to remember when the effort has resulted only in failure.

These failures are due, perhaps, to an effort to do too much, or to improper care and poor and unsuitable soil. In beginning the culture of onions, start slow. A half acre or less the first year is enough. There are many things we can learn about onions by reading the experiences of others, but there are other things that we only learn by our own experience. At first, the farmer does not realize the amount of care necessary and the crop is apt to be neglected.

SOIL.

Onions, unlike most kinds of garden or field crops, succeed well or even better when cultivated on the same soil for successive years. An instance is cited in England in which onions were grown every year for 100 years on the same ground, and the last crops were the best. As to the best soil for onions, there seems to be some difference of opinion by the best authorities. Joseph Harris says* onions will grow on all kinds of soil, but that well subdued and thoroughly drained muck land offers every condition for success. James J. H. Gregory says† they may be raised on a variety of soils, but that they yield the most satisfactory returns on a "sandy loam, a gravelly soil, or in general we may say a light soil." Both unite in saying that a heavy clay soil is not desirable. Some maintain that onions are of a milder, better flavor when grown on a sandy soil.

In my own short experience I think I can safely say that it is not profitable to try to grow onions in a mucky soil which has not been thoroughly subdued. One of the first requisites, however, in choosing a soil for onions is that it shall be as free from weeds as possible. Mr. Gregory says: "Don't plant a weedy soil to onions: if you do you will repent it all summer long on your hands and knees."

MANURE.

The soil must be rich. The richer the soil, the larger the onions, the greater the yield. The more manure the better. All kinds are good but well rotted manure is always best. Manure may be plowed under in the fall, or harrowed in in the spring. Many kinds of commercial fertilizers may be profitablely applied, especially in connection with other manures. Peter Henderson says that stable manure delivered on the ground at $3.00 per ton is cheaper and better than any kind of commercial fertilizer. Not less than 30 tons to the acre should be applied. Hen manure is one of the most valuable fertilizers for onions, applied in the spring and harrowed in. Wood ashes spread on alone in quantities of five or six tons to the acre will usually give excellent results, especially on muck soils. Wood ashes when mixed with other manures liberate ammonia, thus deteriorating their quality. It is therefore better to apply the ashes separately, scattering on the surface at the time of planting, or when the crop is half grown, or both. It is well to bear in mind that it will always be more profitable to fertilize one acre of onions well than two acres imperfectly.

---

*Gardening for Young and Old.

†Gregory on Onion Culture.

TILLAGE.

Plow in the fall when possible and do not replow in the spring. Plow shallow, especially in the spring. Deep tillage is not required nor desirable and often a positive damage. Experiments conducted at the Minnesota Experiment Station* seem to show that it is not necessary to plow at all. For onions we want a shallow layer of mellow soil resting upon a rather solid stratum. If the ground is plowed in spring it should be thoroughly rolled and crumbled. In any case, it must be pulverized and harrowed until it is smooth and fine. The surface need not necessarily be raked.

SEED — PLANTING.

Having prepared the ground we are now ready to plant. There is not much danger of sowing onions too early, provided the work is done well, for plenty of moisture is what the seed particularly needs in germination. In beginning onion culture, choose well-known varieties. The three standard varieties for culture in the old way are Yellow Danvers, Red Weathersfield and Silver Skin. Procure the best seed. The best is the cheapest. Seed more than one year old are not reliable. Be sure and test the seed before planting. Plant with any good seed drill, in drills twelve or fourteen inches apart and not more than half an inch deep, or just as shallow as possible and insure the germination of the seed. Set the drill to drop three or four seeds to the inch. At this rate it will take about four pounds of seed to the acre. It is far better to have onions too thick than too thin. Shallow sowing is necessary for the best development of the onion. But care must be taken that the seed is well covered, otherwise, owing to its thick epidermis, it will not germinate, especially if the weather is at all dry. The soil should be pressed firmly about the seed. It is well right after sowing to roll with a light hand roller.

CULTIVATION.

Cultivation should begin as soon as the onions are up enough to enable one to see the rows. A few radish or cabbage seed planted with the onions help to mark the row earlier. It is not necessary to cultivate deep; just break the crust at first. Use a wheel hoe or a scuffle hoe. Cultivation must not be neglected. The weeds must be kept down. The soil should be loosened as often as possible, at least five or six times during the season. It will be necessary to go over the crop three or four times and weed by hand in the row. This is the hardest and most expensive part of the work. When the onions have begun to form their bulbs, it is the general practice to remove as far as practicable any surplus earth that has been accumulated around them.

---

* See Bulletin No. 10.

It is generally not necessary to thin much on a rich soil. The old practice of thinning onions to two or three inches apart in the row is now abandoned by all experienced growers. Onions will grow in bunches of three or four or five and if the soil is rich enough twelve, fifteen or even twenty onions can be grown on each foot of row.

HARVEST.

As the onion developes and the crop begins to mature, the tops turn yellow and shrivel up near the bulb and fall over. This usually occurs about the last of August or the early part of September. When the majority have fallen over, the crop is ripe and should be harvested immediately. If the seeding was late and the weather is wet in the fall, the onions may not ripen at all, hence the great necessity of early seeding. The necks of the onions are sometimes bent over to hasten the ripening process, by ckecking the flow of sap to the tops. This may be done by a light hand roller. The pulling of the crop should not be delayed after the onions are ripe, for if the weather should become wet, a secondary growth of the bulbs may take place, which will seriously injure the crop.

The pulling may be done by hand or more easily and quickly and perhaps as well by a common garden rake. The onions may be simply lifted from the ground and left to dry where they grew, or as is the general practice, two or three, or more, rows may be thrown into a wide windrow. By using the rake, all this can be done without stooping. The drying should continue until the onions feel hard and firm, perhaps two weeks, then they should be gathered. Gather with the tops on, using them as handles. Handle carefully, all bruises are apt to cause rot. Much handling and bruising is saved by gathering and hauling in large sacks. Pile the onions on the floor of a dry but open and well ventilated building and not over two or three feet deep. Here they may be left as long as warm weather lasts, and the tops may be pulled off at leisure, or when the onions are needed for market. In topping, the small onions are usually sorted out and sold as pickle onions.

MARKETING AND STORING.

The price of onions varies greatly. From September to March, prices may range from two to six dollars per barrel. The general truth is that those brought latest to market, being kept till near spring, bring the best prices. If it is desired to keep the crop for a winter market, it should be stored in a cool, dry place, out of danger of severe frosts, in bulk in shallow slat-bottomed bins, not over two feet in depth.

If it is designed to keep the onions till spring, Mr. Gregory says the cheapest and best way is to freeze them. Choose the northwest portion of some out building, cover the floor with a foot or so of hay, on this spread a layer of onions to the depth of from one and one-half to two feet, leaving a vacant space of about two feet on the sides next the building. Fill this with hay. Let the onions get thoroughly frozen, then cover them with two or three feet of hay. Here let them remain until the frost is entirely out in the spring, when they should be spread, well aired and turned carefully and often until thoroughly dried. To store largely for winter or spring sales is attended with much risk. A beginner ought rather to sell in the fall and commence to store on a small scale.

DISEASES—INSECTS.

The diseases and insects which attack the onion need only be mentioned here. The principal ones are the rust and the maggot. The rust is a fungus disease of the tops. The maggot is an insect, or rather the larva of an insect, which attacks the roots. Neither are troublesome in the west, but in the east on old onion grounds they are often very injurious, the maggot especially.

SCALLIONS.

A scallion, incorrectly called scullion, is a small thick necked immature onion. Scallions are the dread of the onion grower. They are the result sometimes of poor seed, i. e., that raised from immature bulbs. Late sowing is the most frequent cause. Neglecting to hoe and weed the crop properly is another cause. Poor soil may have something to do with it and likéwise, perhaps, deep tillage.

PROFITS.

I give here an expense and profit account of an acre of onions grown on my father's farm last season (1891). It reads as follows:

Expense.		*Receipts.*	
Rent of land one year	$4 00	Total marketable crop of 450 bushels at average selling price of 80 cents per bushel	$360 00
Preparation of soil	2 50		
Seed, 4 lbs., at $1.00 per lb	4 00		
Sowing seed, one day	1 25		
Cultivation between rows, five times	12 50		
Weeding in row three times	67 50		
Pulling, one and one-half days	2 00		
Hauling topping and sorting	20 00		
Expense of marketing, five cents per bushel	22 50		
Interest on money invested in tools	90		
Total expense			$187 15
Total profit			222 85

It will be noticed that I have included no manure in the expense account, for this reason, that no manure was applied to the ground last season. In the spring of the year before, this acre was manured at the rate of about forty loads of hog manure and 200 bushels of ashes to the acre. Over 150 bushels of potatoes were harvested from the acre that fall, which amply paid for the manure. The manure cost us nothing except the making and hauling. The ashes we got for the hauling. But that no fault may be found with the results, let us deduct from the total profit, the total commercial value of the manure put on the year before and already paid for by a previous crop, and we have:

Total profit		$222 85
200 bushels ashes at ten cents per bushel	$20 00	
40 loads manure at fifty cents per load	20 00	
Total		$40 00
Leaving still as a net profit from one acre		$182 85

In closing, I will say in regard to the method of onion culture to be discussed next: First, that it is not a new method at all. It was practiced in Europe fifty years ago, and has been revived here since the recent introduction of the large Italian varieties which do not mature in this latitude if the seed is sown in the field. Second, that it will without doubt give much larger returns with some varieties. Experiments, however, conducted at the Ohio Experiment Station * in 1889 and '90, show that the yield from the old standard varieties, as the Yellow Danvers and Red Weathersfield, is not greatly increased; and from a recent report of the Rhode Island Experiment Station we find that although the bulbs were larger, the total yield was about the same as when grown in the old way. The best keeping varieties still pay as well, perhaps, grown by the old method. The new method requires more care, risk and expense. It is all right in its place but it does not answer all purposes. Onions will continue to be grown by the old method, and profitably, too, and I believe that "The Good Old Way" is still the better way for most of us, at least for beginners.

PRACTICAL ONION CULTURE BY THE NEW AND BETTER WAY.

By CARL H. POTTER, Madison, Wis.

"The world does move" was the reiterated statement of Galileo of old; and indeed the statement is as true now as in the days of that ancient astronomer.

But now we make the statement in a much wider sense. The world moves socially, politically, ethically, religiously, and indeed in all direc-

---

* Bulletin No. 14.

tions, depending merely upon our point of view. The methods of our ancestors are not the methods for us. New truths are constantly being discovered and new methods adopted. He who would be successful in any avocation must be awake and in the lead. In all pursuits competition compels us to cast aside the crude and expensive methods of our forefathers. A few generations hence and many of the methods of our artisans and our scientists, our manufacturers and our farmers, will have become things of the past. Their value will be merely historical.

In none of the industries is this more markedly true than in agriculture and kindred branches. The horticulturist of to-day can not do as did his father or grandfather. Improved methods of production and increased transportation facilities bring him into close competition with the whole world. The old, old question of how to "make two blades of grass grow where one grew before," is one of his principal tasks. He must do this, make that one of superior quality, or produce it more cheaply, or both, or all three.

This is as true of onions as of "grass," and it is my present purpose to describe methods by which all three of these objects may be accomplished. During the past season it was my pleasure to produce a crop of the fragrant bulbs that rivals all which I have heretofore seen, but which under more favorable conditions could easily be doubled or even trebled.

So far as management is concerned the new system differs from the old in that the onion seed is sown and germinated in hot beds or cold frames, from which the plants are transplanted to the open ground.

Before entering into the details of the new method it may be well to discuss briefly the general requirements of the successful onion grower. The man himself should be an intelligent, thinking man. The more complete his education the better, but besides horticulture he should have a fair knowledge of agricultural chemistry and physics. He should know what and in what proportions are the chemical constituents of his soil, and what are the chemical requirements of the crop he is to produce. He must understand the physical properties of his soil and sub-soil and know if they are adapted to his needs. He must take into consideration his climatic environments and the requirements of his crops.

If not already located he must seek a location suited to his wants, taking into consideration not only soil and climatic conditions but shipping facilities, and facilities for obtaining manure at a small cost. In many of our western cities the manure can be had for the hauling. A good local market is a great help, but by no means a necessity.

The soil selected should be loam, sandy loam being preferred; best with good natural underdrainage, but certainly with drainage of some kind. A puddled wet soil is death to onions. According to Mr. Greiner, "Water should not stand upon the surface of an onion patch, even for a single day." Previous to the crop of onions the land should have been planted to some hoed crop, so that it will be clean and mellow. Young clover sod does well if plowed in the fall. It makes a light porous soil. Whatever the land used it should, in my opinion, be manured in the fall to the amount of fifty to one hundred loads of well rotted stable manure per acre, and then plowed before freezing weather commences.

By so doing freezing weather, etc., will render the soil porous and will incorporate the manure quite thoroughly with it.

Could I obtain just such fine, rich compost as I should like, I would put it, after plowing, upon the land in piles, making about three piles to the load. This could be spread in the spring, after the soil had become sufficiently dry to cultivate, and be worked in with a disk or spading harrow. This would leave the fine manure more near the surface, where it would act more as a mulch. But, on the other hand, it would cause the roots to to remain quite near the surface, and would thus render them more liable to injury by drouth. On the contrary the more deeply-placed-manure would cause the roots to trend downward where they would be less liable to injury from lack of moisture. Again, the placing of the manure upon the ground before plowing gives a deeper soil, and one that will make excellent soil the succeeding year.

Unless the manure is exceptionally fine it would, if placed upon the plowed land and cultivated in, be quite a hindrance to the planting and cultivation of the crop. In either case the land will be ready for the disk harrow and for planting just as soon as it becomes sufficiently dry in the spring.

The location of the seed beds should be one that is sunny and sheltered from the wind.

If the seed is to be sown in February or March, for this climate, I would recommend the use of a hot bed rather than a dependence upon the mere cold frame. Sometimes old Boreas will linger late in March, or will make some unexpected swoop down upon our fragrant plantlets, greatly checking their germination or growth, though seldom would his icy breath be severe enough to destroy them, provided they were properly covered at night and on cloudy days.

The compost for the hot beds should be horse manure, containing a considerable straw or litter to check a too rapid fermentation. This compost may be placed in a pit dug for the purpose, or upon the surface of the ground, to a depth of about two feet. Upon this the frame is placed. This is usually six feet wide and of any desirable length, sloping from back to point six to eight inches, and facing the south. The soil for the seed bed should consist largely of sand, mixed with rich sifted garden soil, or better, humus. Some very fine well rotted stable manure should be mixed with it and the whole filled into the frame evenly to a depth of three to six inches. Wood ashes liberally applied make a valuable addition to this mixture.

If the cold frame is used, i. e., the hot-bed frame without any compost beneath, the seed should be sown by the middle of February; certainly not later than the 1st of March. Provision should be made in the fall so that the soil where the bed is to be and that which is to be used shall remain unfrozen. It is also well to have the frame made and the sash procured before hand so that that will not have to be attended to while Boreas is king and Sol is looking at us askance from his southern realms.

The frames must be thoroughly banked about with horse manure, and at night or upon extra cold or cloudy days, the glass, oil cloth or paper covering must be protected with straw, mats, blankets, boards or whatever is suitable and most accessible. But equal care must be taken to not let the temperature run too high.

There is still another method of growing the plants which we are trying at present, and that is growing the plants in the fall and keeping them over winter. So far as I know it is purely an experiment and we will watch it with a considerable interest.

If this can be successfully done the plants will have obtained quite a considerable size by the time they can be transplanted.

Great care must be taken to properly ventilate the beds. Liquid manures may be used as well as dry concentrated fertilizers, but great care should be taken not to use them too freely.

According to Mr. Greiner, about 130,000 plants will be required to plant one acre, placing the rows 1 ft. apart and the plants 4 in. in the rows. This will require from 1½ to 2 lbs. of seed, but I believe double that amount would be better. The rows should extend cross wise of the seed bed, should be about 3 inches apart and should contain 0.2 to 0.3 lbs. per sash, according to the number of sash used. The sash are usually 3 ft. in width. From 15 to 20 will be required.

The most desirable sized onions for transplanting are about $\frac{3}{16}$ in. in diameter at the crown. By sowing the seed at intervals of a few days or a week, plants of this size may be had throughout the transplanting season. Before being taken from the beds the latter should be heavily watered. Then the plants may be taken out a handful at a time. A quick sharp turn of the wrist will throw the soil from the rootlets, when the plants will separate very easily. They may then be placed in empty tin fruit cans, from which one end has been cut. A little water in the can will keep the roots moist and fresh. The plants may be set along a line stretched tightly across the field or in check rows 1 ft. apart, two plants being set between the checks in one set of rows. For the average set of hands I consider the latter method preferable. Perhaps a line with cross marks would be still better.

Each workman takes a can of plants which he places in front of him upon the opposite side of the line at which he is working while he kneels upon one or both knees. With a dibber in one hand, which may be merely a short stick one and one quarter inches in diameter rounded to a handle at one end and tapered to a point at the other, a hole is made to a depth of three inches. As the dibber is withdrawn the plant which has meantime been grasped between the forefinger and the thumb of the other hand three to four inches from the bulb which points away from the fingers and downward, is inserted in the hole. The dibber is quickly withdrawn and inserted again less deeply a little to one side and the soil crowded closely against the bulb and roots, not the neck of the plant. Another rapid movement of the point of the dibber will fill up the last hole, when the operation may be repeated.

So rapidly can this be done that a skilled workman, if supplied with plants, can set 4,000 to 5,000 plants in ten hours. This brings the cost to about $50 per acre. Quite a sum to be sure, but I think no more than is covered by a saving in weeding and thinning, especially upon land inclined to be weedy.

Where the rows are so close together the cultivation must be done by hand. Indeed, rows sufficiently far apart to permit of horse cultivation upon such expensive, fertile land, is simply out of the question.

But when I say cultivation by hand I do not mean with the hand hoe! "The world moves" and now there are several styles of hand cultivators which do as much work as several men with the common hoe, and do work of a decidedly superior character.

The tool which we used and which I consider a little superior to any other with which I am acquainted is the "Gem." It was provided with both the single and double wheel attachments, thus enabling us to go astride of a row, or between the rows, as we choose. Unless it is particularly desired to go astride the row, as is the case when the plants are very small, the single wheel is much more convenient and preferable. The hand cultivators are nearly all supplied with cutting and with cultivating tools.

The soil should be cultivated at least every week, and certainly after every rain.

If the cultivation is supplied with proper knife tools no weeding between the rows will be necessary. But in the rows weeds cannot be reached with the wheel hoe and must be taken out by hand. A very good instrument to aid in this can be made from a common table knife. Bend the blade at right angles close to the handles then about an inch from this angle bend parallel to the handle again, and about one and a half inches from the end bend up. Sharpen both edges and the end and you are provided with a very serviceable little instrument.

Either before or soon after setting the plants in the field sodium nitrate should be applied by sowing broadcast. This should be repeated several times at intervals of perhaps two weeks, making the total amount for the season from 160 to 250 or 300 lbs. per acre.

Do not scrimp the manure. If you haven't money enough take some of your mother-in-law's or your aunt's and feed your plants.

Unless your barnyard manure was *very, very* fine and well rotted, apply concentrated manures early in the season, for at that time the heat of the summer has not yet become intense enough to convert the nitrogen of the manure into the nitric acid or nitrate in which form it is most available to plants.

When a majority of the tops are lopping over and withering away at the neck is the time to pull. Pull them all. True, some will not be quite ripe, but there is no time to make a patch work job of it. Here in Wisconsin we usually have dry, sunny weather in September and October, in either of which months the onions could lie upon the ground for ten days or two weeks without any injury whatever. This will enable them to become sufficiently well cured for immediate sales, where they are soon to be consumed.

The pulling can be very rapidly done. The person doing the work should pull several rows at once, drawing them towards him as he moves along on his hands and knees.

The onions should be merely drawn from their places and allowed to lie spread out.

Those which are marketed from the field should be freed from their tops by having them twisted off. If they are to be stored the tops should not be removed while in the field. This would add very greatly to the expense. In picking them up three persons work to very good advantage. One, a man, should hold and carry a bag while his two assistants rapidly gather the onions.in both hands by means of the tops and fill them into the bag.

They may then be hauled and spread out on any spare floor space where the air can have free access to them. Corn cribs would do excellently well for this purpose. Extra floors of loose boards could be placed in them and the floor space greatly increased. When sufficiently dry the tops are very brittle and come off easily. This topping could be done at odd times, which is often an advantage.

If the onions are shipped to market care must be taken in selecting packages. If barrels are used they should hold just 10 pks., no more and no less, as this is the usual size, and is the amount buyers will pay for. The barrels may be covered with canvas fastened by the upper hoop.

Covered bushel baskets would do nicely for this purpose, especially as the cost of the basket, which is only about 16 cents, could be recovered. When emptied the baskets would retail readily at that price. I would not advise keeping onions over winter unless exceptional facilities for storage are at hand.

When grown in this way larger and choicer varieties may be grown. Good authorities recommend the Prize Taker or Spanish King for this purpose. Prof. Green of the Ohio Experiment Station recommends other varieties.

Choice early varieties may be grown in this way and be ripened and ready for market by July 1st, at which time premium prices can always be obtained. This would leave the field clear for a second crop of potatoes, turnips, cauliflower or many other garden or farm products.

These choicer grades of onions will always command premium prices, besides giving a much more abundant yield. Mr. Greiner, of La Salle, N. Y., claims to have grown almost 2,000 bushels of Prize Takers from a single acre last season.

Taking into consideration that three-fourths of the seed is saved by transplanting, that the yield may be trebled, that prices will be 25 per cent. or more higher, and that a higher grade of cultivation is rendered possible. I am a hearty supporter of the new method. But touch it easy, "It is better to grow into a specialty than to go into it."

DISCUSSION.

C. A. HATCH — I do not want to criticize this paper at all — the first one is all right for I have raised them that way — but I criticize the way of harvesting them. The idea of harvesting them is not original with me. I use boxes to put the onions in instead of leaving them on the ground, they are very convenient. One criticism I wish to make on piling manure. I do object to putting manure anywhere in the field in a pile, for you will get a great deal more benefit from it if you spread it. If it is in a pile yo will get more benefit from it under the pile than anywhere else. I want to speak of the hoe; if he will get a common garden hoe and cut off the corners it will be just the tool he needs for hoing his onions.

J. M. SMITH — Mr. Hatch, those hoes are common in the market, if you will come to Green Bay you can get them.

PROF. GOFF — With all our knowledge of transplanting I never saw anything so successfully conducted. The day that Mr. Potter transplanted no rain came and there was none for five weeks; the bulbs were small, only about the size of a small pencil. For ten days the onions stood still and I think that not more than five or eight per cent. were lost from transplanting. We had no rain from the last week in July until the last of September or first of October. Mr. Potter had less than an acre and he harvested 500 bushels per acre. The land was in poor shape; with better conditions he might easily have produced more. Mr. Ten Eyck has given you the result of his experience on his father's farm; he has not gone to books for it.

J. C. PLUMB — I would like to ask Mr. Potter if he has found difficulty from putting down too deep in the soil.

CARL H. POTTER—No, I put them down two inches deep, there is no danger in good soil and with good cultivation.

J. C. PLUMB—Have you not in transplanting seen a tendency to run to seed? In sowing my onions in the fall and transplanting in the spring I found a tendency to run to seed.

CARL H. POTTER — In the Bermuda varieties it takes longer to mature and I think there is no danger of running to seed. I want to say a word about spreading manure. If you immediately spread it when you draw it out, at 100 loads per acre you get a thick mulch that will retard in the spring.

SECRETARY — Mr. Smith, how large a yield do you get per acre, do you get as much as 500 bushels to the acre?

J. M. SMITH—Oh, yes, that is no crop at all. The first year of my experience in growing onions was very profitable. One year I put 800 bushels in the cellar thinking they would bring a better price in the spring, but I actually drew them out onto the manure pile.

Q. Do they succeed year after year on the same soil?

A. After a series of years they begin to rot right after ripening and again after selling, so now we change them every few years, therefore I think it decidedly better, and so do many of my neighbors, to change soils. Plowing shallow is a mistake; I think we need a very deep, rich soil. I have buried the ground with manure and they would not make bottoms, they would make scallions.

Q. Do you remove the earth from the onion?

A. Yes, when growing.

Q. Is there such a thing as getting them in too deep?

J. M. SMITH — Yes, but if you sow four or five pounds of seed to the acre they will have a tendency to grow out of the ground, while there is a tendency in other crops if sowed too thick to dwindle out, onions seem to be right the reverse, they thicken up.

With regard to the hoes of which I spoke, they are a great improvement. I seldom use one of the old-fashioned hoes in my garden. We grind the hoes so that they are about as sharp as a razor; we grind them three or four times a day; they do not last long but we keep them sharp; we grind the edges. Two tons of eastern phosphate — as good as there is — laid down at our garden cost us about an even $200. I do not think I have received five; I surely have not received ten dollars back from it. I do not like to make this statement but that is my experience. I tried it last summer on celery. I put it on in different ways, mixing some and I left part without any of the phosphate and still, as I said, I do not believe I got ten dollars out of it. About large prices — you cannot get large prices except for very early ones. We use the small ones for bunch onions; it is seldom that you can sell more than five bushels in a place. It is very rarely, indeed, if we succeed in selling a car-load of onions before the first of September. People do not want to buy early because they can buy in the fall and be sure they will keep. To raise early, thinking to put them on the market, would be a ruinous thing. There was a great excitement for a few years among growers. My onion crop yielded 2,200 or 2,300 bushels. I have never had an order for the prize takers. I have a few bushels that I have kept, for I wanted to see how they would keep through the winter.

Q. What is a moderate crop with you?

J. M. SMITH — 600 bushels. I want to make my land raise 1,000 bushels per acre and then raise a crop of carrots or celery.

Q. What is the value of wood ashes?

A. We pay twelve cents per bushel and consider it very valuable manure.

Q. Have you ever been troubled with the cut-worm?

A. We have.

A. J. PHILLIPS — In regard to Mr. Smith's not seeing any value in commercial fertilizers, it is something as physicians say when a man has been soaked all his life with whiskey it does not have any affect on him to give it to him for medicine Mr. Smith's land is so highly fertilized that he does not see the effects of the commercial fertilizers.

J. M. SMITH — The large onions are not so desirable. A man looked at my crop and said, " that is just what we want for our Philadelphia market." You do not want on onion as big as your head or a dinner plate.

Q. What sort of packages do you ship in?

A. We ship in sacks.

CARL H. POTTER — One thousand six hundred crates are required to store the crop from one acre. When we gather onions from the field they are not dry enough to be stored. If the tops are left on they will not cure readily.

C. A. HATCH — If he stores them in crates he can store them fifteen or twenty feet high and they will dry out with a space between the crates The crates can be used for several years and their cost is slight. T. B. Terry handles his crop of potatoes entirely in crates.

J. M. SMITH — They are not crates, they are boxes. We used to sell onions by the car load in crates, but we do not do so now, we have not for years; we put them in sacks costing sixty dollars per thousand, sewing them up. If the sacks are returned we give credit for them, but as a rule they are not returned.

WHAT BUSINESS TO FOLLOW IN CONNECTION WITH FRUIT GROWING.

By C. A. HATCH, Ithaca.

Some of the reasons why another business is needed to go with fruit growing. 1st. Lack of employment during one half of the year. True, the fruit grower may put in much of this idle time in making boxes, crates, etc., and getting ready for the coming harvest, but all this can be done by the cheapest kind of labor that can be had in market for $20 or even less per month and any man who has brains enough to make a success of growing fruit had better use them to more purpose.

2d. *Rotation is necessary.* In order to maintain the productiveness of our fruit farms, change of crops is necessary with some of them, notably strawberry and raspberry plats; two years for the former and five for the latter being found to be the limit of profitable culture, and a laying off from these crops for the same periods for these plats is also advised by those having practical experience, and what are we to do with the land in the meantime? We can not afford to let it remain idle and grow weeds to seed the rest of the farm, and our land is also too high priced for such a shiftless way; surely there is need of a crop right here that shall not only restore the exhausted soil but meet some one of the other requirements of our business. Not only must the whole farm be utilized, but it must be made to contribute to the success of the fruit crop, for that is what we are supposed to be after and every thing must be secondary to that, or help in some way to advance our success in that line. If we are compelled to grow crops other than fruit, or those which from that standpoint would be called waste product, we must not only learn to utilize them but even make them help along in our regular business. Manufacturers have learned to utilize waste products, and some even look to what was once considered lost, for their whole profits. The charcoal burning for example, the smoke and steam that used to be allowed to escape into the air and be lost is now saved, furnishing wood, alcohol and acid enough so that what was at first the whole product sought, the coal, is now the by-product. The large slaughtering houses of Chicago have almost "cornered" the killing business of the country. How have they done it? can a steer be knocked in the head, skinned and cut up any cheaper there than in our rural villages? No, but all the by-products are utilized that would be lost in your country butcher shop; hoofs, horns, hair, bones and all that can not be used in its natural form is turned into something else that has value, even the blood having its use, and consequently its value. Let us learn a lesson from this, to use our waste products.

3d. *Fertility is necessary.*— Fertility is one of the prime necessities on the fruit farm, the fruit crop is very exhausting. We cannot take advantage of the crop as we can in some farm products, and harvest before the plant has exhausted all its resources and ripened its fruit and seed fully, by harvesting in a green stage and thus conserve the producing elements of the soil. But we are compelled to let the fruit plant take all it can get and even encourage it to take more that our fruit may be of the finest, both in size and flavor. This, in the very nature of the case, makes it a very exhausting business. We call wheat growing wearing land when we get twenty bushels per acre. Is fruit growing any less wearing when we take 100 to 300 bushels of berries off the same amount of land? If we are fortunate enough to live near a large town where livery stables can furnish us a cheap fertilizer, we can make these feed our soils. But what are you going to do with the waste products, the clover you must grow to get your land in good tilth and store up more plant food for you? Would it not be better to feed it at home, increase your compost heap, make winter work, and also add to your income?

4th. *Hired help.*— No man can expect to run much of a business in fruit growing unless he hires help. If he wants good help, and who does not, can he expect to keep it for only six or seven months in the year? Can his help afford to be idle one-half the time any more than the "boss"? Then here is another reason for another business to be run in connection with the main idea. What is true of hired help is also true of teams, there you must keep, at least part of them, all the year, and is it not good economy to find some employment for them enough to furnish exercise. Or do you belong to that class that prefer to give the horses required exercise between house and town, so that the owner may spend his time in idle gossip in stores, or perhaps worse yet, the saloons? If you do you are not the man I am talking to, its "the other fellow."

Failure sure to come—To guard against failure in crops is another reason for more than one egg in your basket, late frosts are not unknown, and drouths are sure to come, and the wise man has more than one line to his boat so that the first adverse wave will not swamp him. Not that every fruit man should be a general variety man, but I would have you a fruit grower first, last and all the time. I fully believe in specialists, but at the same time every specialist should have some side business that would do to fall back to in case of failure on the main issue, it seems to be necessary in the very nature of all rural industries.

Having looked our gronnd over and set out stakes, let us see if we have any we can tie to, or in other words can we find a business that fulfills the requirements?

1st. It must be a business that will give employment when our regular business does not.

2d. It must not be too exacting, for we must relax our energies somewhat during part of the year or we will too soon wear out.

3d. It must utilize the unemployed part of the farm and use up the waste products.

4th. It must in some way contribute to our success as fruit growers, besides being a self-sustaining business.

5th. It must not seriously interfere with our regular employment.

6th. It must be somewhat intermittent, i. e., needing attention during only part of the year.

None of the professions will do, for no matter how effective a Divine's sermons may be when delivered they could hardly be used when stale on a fruit farm. Sorting apples and crating fruit. or listening to the complaints of exacting customers, might be a means of grace, but hardly conducive to ministerial dignity. Lawyers' bribes, and array of disappointed clients in connection with the M. D's worthless nostrums and discarded pills might be interesting as a collection but could hardly be useful in fruit growing. Then there is no "lay off" in the professions, men must be preached to, doctored and helped out of their breaches of law just as much in July when raspberries are rushing, as in January when the snow is two feet deep. Merchandising is open to the same objections. Banking might do, but most of us if we had money enough to run a bank would hardly care to dabble in berries, and vex ourselves over questions of fertility and productiveness.

Our president seems to be an exception, but all men cannot work by proxy and all have not a son-in-law ready and willing to take the active running of the machinery. It must be some rural pursuit, otherwise how can we utilize our extra crop of grain and clover. Dairying might do if it were not so exacting and there is no let up in the summer, the cows must of necessity be kept the year round, which means much land in pasture. Winter dairying might do if the cows could be sold in the spring and bought in the fall, but experience has proven that a paying herd of dairy cows cannot be built up in a day but are the result of careful selection and breeding, the results of years. Steer feeding is open to much the same objection, for when grass is freshest and plenty is when the profit is most.

Hogs are out of the question, for no fruit grower can afford to raise corn enough for their want, and no one ever fattened hogs on clover hay.

Sheep seem to be the only animal left, and in them we find just what we want. If pasture is lacking we can buy our flock in the fall and sell in the spring; they will turn clover hay into money faster than any other animal and return 95 per cent. of its fertility to your field. They are not so exacting that they need all our time, but will shirk for themselves if fed twice a day and given access to water. They seldom fail to give good returns for the care and labor bestowed on them and easily adjust themselves to their surroundings. No costly stanchions, barns or extravagant fixtures are required, but simply a good roof over head and dry ground under feet. It can be made to interfere but little with summer work. Shearing can be done in May and fleece and flock all sold. Winter lambs pay better than any other farm product here grown, and if one has room on the farm for the mother sheep from September on, and skill enough as a shepherd, it can be followed and every thing cleared off before strawberries are ripe, the compost heap much enlarged and enriched and a good round profit realized besides. It requires some intelligent attention as what does not, but is not difficult to learn, and to one who is accustomed to the exacting attention of small fruit growing usually is not uncongenial. Fussing with puny lambs that will persist in dying in spite of all your care, is sometimes not pleasant, neither is fussing to please an intelligent being that will persist is *not* being pleased with all your well meant efforts, for who has not found the customer who always says "the berries were too sour, too ripe, too green, the boxes were not heaping full, the apples did not keep well"—when you sold them for fall apples — "they were wormy or knotty," etc., etc. You have all been there, so there is no use in repeating the scenes. But however mean you treat your sheep or however bad the feed you compel them to eat you can be assured of one thing you will never hear any grumbling, and the only place you will feel it is in your pocket book and perhaps your conscience, unless the popular superstition that fruit growers have no conscience be true, and there seems to be good ground for thinking it is true, judging from the small apples found in the middle of far too many barrels.

Some knowledge of breeds and the habits of sheep are necessary, also market should be well studied. But sheep men are the most obliging of fellows and will tell you all they know and more too if encouraged a little, so there is no excuse for being ignorant of the main requisites.

Lastly and in conclusion, think of it and if it seemeth good "go in," if not keep out and in either case your humble servant will try therewith to be content.

No doubt some of you are thinking he has said nothing about beekeeping and being a beekeeper, we rather expected him to extol that business as the one to go with fruit farming, so allow me to say in a sort of a postscript way that I do not think beekeeping well adapted to the end sought; 1st, because to make a success of if there must be natural honey resources, for no artificial pasturage can make up for this. Few fruit farms have this requisite. 2d. Beekeeping does not furnish winter employment and its busiest time comes right in June and July, when the fruit grower is rushed to keep up with his berries and ahead of the weeds. If one can forego strawberries and raspberries, fruit growing makes a good annex to beekeeping, but bees do not manage well with a full list of fruits. We believe all fruit growers where bees are scarce, can keep a few colonies with profit not so much for the honey they will make but as pollen distributors to fertilize and cross fertilize the bloom, and let me beg of you, do not make the unpardonable mistake of spraying with poisons during the fruit bloom, and thus kill your best friends.

DISCUSSION.

A. J. Phillips — Mr. Hatch is very near right on that point that it requires fertilizers to build up a fruit farm. I am located six miles from a city and I cannot pick up manure that way. About the kind of stock for a fruit grower to keep, winter lambs are all right if you have a hired man to take care of them. One-half of the trees in Wisconsin stand to-day as though there was a little mound made where the trees were planted and in consequence the rain always runs off instead of soaking into the ground to benefit the tree. Now we must have manure for our fruit and to get it we must keep some stock and I think the best stock on a fruit farm is a brood mare.

J. C. Plumb — I would like to ask Mr. Hatch if he would pasture his orchard with sheep?

C. A. Hatch — Yes, I pasture my orchard with sheep and the trees bear right along. If you pasture with sheep, Mr. Phillips' lath protector for your trees is indispensible.

A. J. Phillips — Mr. Whitney said: "If a sheep was brought up in an orchard it would never touch a tree," but I found it was not so; the trees need protection from them.

Q. Do you put colts in your orchard?

A. Yes, sir; I pasture all my colts in my orchard.

C. A. **HATCH** — Yes, and eat all your fruit, away up on the limbs, and eat the limbs too.

A. J. **PHILLIPS** — No, sir; they will not touch the fruit if there is grass enough. Of course if there is no grass they will have to eat something.

J. C. **PLUMB** -- We will let the horse and sheep men fight it out, but there is one thing that is beneficial to an orchard that will not injure it and that is poultry — chickens. How far they are successfully preventing the ravages of insects I do not know, but I do know they are beneficial and I have the facts and figures right here to show that they are profitable, there is no *guess* work about it.

B. F. **ADAMS** -- It seems to me this whole matter is a matter of taste on the part of the individual; if he has no taste for horse or sheep raising he would not be successful with either. I lived fourteen miles from a city on a farm where I commenced farming thirty years ago. I devoted about two acres to small fruit and in connection with fruit growing I run the farm. I found it absolutely necessary to fertilize that two acres several times during the fourteen years and the product of those two acres greatly exceeded the product of the whole farm.

PRESIDENT -- I think if a man is going to be successful he must make that his business and not have any other business connected with it; he must not go into the chicken or any other business.

C. A. **HATCH** -- I understand Mr. Thayer raises clover and mulches his fruit. Why wouldn't it be better to feed that clover to sheep? They would furnish him with the needed fertilizers.

WEDNESDAY, P. M.

Discussion closed to receive members of the State Board of the Columbia Exposition.

R. B. **KIRKLAND**, Executive Commissioner -- I am not a horticulturist, I know but very little about the science of horticulture but I am deeply interested that Wisconsin should be fully represented in the Columbian Exposition. We have not come here so much to express our views to your society as we have come to listen to your ideas of the part you are to take. I have no doubt that Mr. Samuels will outline very thoroughly what he thinks should be the lines. Our Board, which is also your Board, is extremely desirous that you should express your views so that you may put us on the right track so that we shall not be ashamed of the exhibit in 1893.

Whatever, Mr. President, we are able to give you of our funds we shall do so very gladly. We know that our means are very limited but we shall try to make them go as far as we are able. We have a great many interests to provide for; the dairy, the agricultural and the floricultural, therefore we have come here to find out what you want of us, when we find it out we will endeavor to carry it out so far as we are able, if we find that we cannot carry it out then we will immediately inform you. I would suggest that a committee be appointed from your society to co-operate with us; there is only one of our Board that is especially interested in the subject of horticulture, Mrs. Lynde, of Milwaukee. We will be glad if you will inform us, if not at this day, at an early day the amount you would like to have us furnish you to enable Wisconsin to make a creditable showing.

JOHN M. COBURN — Mr. Kirkland has made the statement concerning our object in visiting you at this time, we come here as your servants and we would ask of you perfect frankness and the Board will make every effort to make the exhibit a success.

MRS. WINANS— I am very sorry that Mrs. Lynde could not be present, we are here to ask you how we can help you. We could not expect to come before this able body and tell you what to do.

It seems to me that we should lay everything aside and attend to this World's Fair exhibit, I am very anxious that Wisconsin should succeed and I am sure she will not fail.

PRESIDENT — I feel able to assure this committee that they will have our hearty co-operation. We feel that we hardly know ourselves, at this time, what we do want. We know that we have those who have energy and courage to carry out our plans proposed. We realize that the whole world will be at our very door. I will call on those who have had experience in this line to talk with you.

J. M. SMITH — I have been very anxious, since the decision of this World's Fair, to live to see the end of it, and I have been very anxious to do what I could to aid it. I would like to ask the gentlemen if they think we can make a fair showing with an appropriation of $65,000? I do not feel like going there to be laughed at; I do not want the state to make a poor showing. We will all go to work and do our best; it is a working society and in that you will not be deceived.

J. C. PLUMB — With the promise on the part of this committee that we shall have our share of means, we will go to work to do all we can. Give us the plan, the scheme on which you are to go to work, we want to know what we can depend on. We have a brace of young men who are ready to push the work along with all the old ones on deck. We want all the money we can get and just four times as much more. We shall have to make personal sacrifices such as we have never made before if Wisconsin makes a creditable showing.

PRESIDENT — Wisconsin has applied for 5,000 feet of space and we can fill it creditably.

SECRETARY — I stated to the members the substance of the letter I wrote to Mr. Kirkland that was laid before the Board at Milwaukee some time ago, to the effect that we had the interest of our society as well as the state of Wisconsin. Horticulture stands better in Wisconsin to-day, and we are better prepared to work than ever before. We need to know how much of the appropriation we can have set apart for us.

R. B. **KIRKLAND** — I was very much interested in the remarks made by Mr. Plumb, and I wish to say that if there is any space allotted to Wisconsin it will be there when you get there. I understand that the application made by this society is for 5,000 feet of space in the building and one acre outdoor space, but the allotment of space will not be determined until the last of July. The amount of space will depend upon the number of applications for space, and cannot be determined until all are in. We do not feel qualified to judge just how much money your society will need to make a creditable display. When the fish commission applied to us we could not tell them what we could do for them, because we did not know what their desires were, but we said to them, come to us open-handed and we will do all we can for you. A member of the fish commission came before us and laid the matter so fully before the board that it saw at once what was needed and granted it. Now if you will come before the board at its next meeting, I have no doubt they will tell you what they can do for you. As Mr. Plumb says, he wants all he can get and more to, we all want that, I know I do in my business.

A. G. **TUTTLE** — I think we ought to make a grand exhibit whether we get a certain amount of money, or not. (Applause.) I expect to make an exhibit, a creditable one. I think we can get a good exhibit even if we do not get a good amount of money.

J. M. **SMITH** — I have been of the opinion that individual exhibits could not be encouraged.

A. G. **TUTTLE** — I am not in favor of it. I propose to make an exhibit for Wisconsin.

R. B. **KIRKLAND** — The exhibit will be a collective one, not an individual exhibit, but a state. I think whatever exhibit is made at Chicago will be identified with the grower, but of this I have not been fully informed as to what their expectations are in that direction. I think, however, that the horticultural will be the same as the agricultural, a collective exhibit.

J. M. **SMITH** — The exhibit will commence in the spring, and perishable articles will be replenished as soon as needed.

R. B. **KIRKLAND** — Yes, sir; provisions will be made for selling the same.

J. M. **SMITH** — Then if my friend Tuttle adds to the exhibit he will not lose his individuality?

A. No, sir.

A. G. **TUTTLE** — It seems to me if that is the case there will be a great amount of duplication. At the Centennial it was the case, if so it would occupy a great amount of space.

B. F. **ADAMS** — It seems to me all there is for us to do now is to make an estimate of what we want to do and how much we need to do it with.

GEO. J. KELLOGG — We want to beat the United States, and with $5,000 we can do it. There is no question but that we can beat any other state in the Union.

T. S. MCGOWAN — Would it not be advisable to have a committee make an estimate of what kinds and how much we wish to exhibit and then find out how much it will cost, and have this committee communicate with the growers? I am willing to contribute anything I grow for the exhibit of the state.

SECRETARY — I think all that is necessary for us now is to appoint a committee to formulate what we want.

J. M. SMITH — I move a committee of five be appointed, of which the president shall be chairman, to meet the board at Milwaukee.

SECRETARY — Such a committee would make an unnecessary expense, and I move to amend the motion by substituting one in the place of five. Carried as amended.

JOHN M. COBURN — Your society is interested in making as good an exhibit as possible. In the first place you do not want to duplicate your exhibit, then you want it arranged in a tasteful manner. Now do you know just how you want this exhibit collected? We want you to come before us and tell us just how much you want and why you want it. We want, when you come to us, to do well by you, I make this as a suggestion. Are you ready to make a detailed statement of what you need, not what you want but your necessity? I do not see the necessity, as no allotment will be made until July for your meeting us now.

GEO. J. KELLOGG — I am in favor of deciding right here now much we shall need and how much we shall ask for.

Secretary moved that M. A. Thayer be a committee of one to meet the board in Milwaukee. Carried.

J. C. PLUMB — I judge by the remarks of Mr. Coburn that he thinks we are not prepared to enter into details, but I can assure him that we will be prepared to formulate our plans in due time. We have always worked to the line. I have a resolution that I wish to introduce at this time.

WHEREAS: The horticultural committee of the Wisconsin State Commission of the Columbian Exposition, have courteously given us audience, and most cordially tendered this society their utmost support in our efforts to secure an honorable representation of Wisconsin Horticulture at said exposition.

Resolved, That we appoint a committee of five with President Thayer as chairman, which shall, at an early session of this society, report a general plan, together with the details for the work of said exhibit.

Adopted.

R. B. KIRKLAND — Our great desire to have this matter expedited is that we may be united. When they come to allot space they will say to us, you have asked for 5,000 feet, what assurance have you that it will be filled? Permit me to thank this society on behalf of Mrs. Winans, Mr. Coburn, and the World's Fair Commission for the courtesy you have extended to us this afternoon.

PRESIDENT — We wish to thank you for the business like manner in which you have met us.

REPORT OF COMMITTEE ON FRUIT EXHIBIT.

To the President and Members of the Wisconsin State Horticultural Society — The undersigned committee appointed to examine and award premiums on the fruit exhibition at this annual meeting, respectfully submit the following report: We have made a careful examination of the fruit and pronounce the exhibition a creditable one. The greatest number of varieties by one exhibitor is shown by Chas. Hirschinger, consisting of fifty-four named varieties of apples, and twenty or more kinds of seedlings. The most attractive exhibit is made by F. H. Chappel, and comprises thirty-five named varieties and ten unnamed seedlings. We have made the following awards.

For largest and best collection of apples — first premium, Chas. Hirschinger	$ 6 00
Second, F. H. Chappel	5 00
Best collection of seedlings—first, F. H. Chappel	5 00
Second, Chas. Hirschinger	3 00
Best plate of apples of any variety — first, C. A. Hatch, Newell's Winter	1 00
Best show of apples by amateur—first, C. A. Hatch	4 00
Best single plates—first, Chas. Hirschinger, on Fameuse, St. Lawrence, Golden Russet, Newell's Winter, Willow Twig, Plumb's Cider, Tallman Sweet	1 00
Plate of Wealthy—first, C. A. Hatch.	

On Bell Pippin, Westfield, Roman Stem, Haas, Longfield, Utter, Walbridge, McMahan, Oldenburg, Repka, Fall Spitzenburg — first, F. H. Chappel.

We recommend that a special premium of $2.00 be given to Geo. J. Kellogg for an exhibit of nine choice varieties, and $1.00 to T. S. McGowan.

We also recommend that special premiums of $1.00 each be given to A. J. Phillips on plates of Avista and Malinda; to A. Smith, plate of President Smith; to G. P. Peffer, plate of Pewaukee, plate of Yellow Bellflower, plate of pears and a winter seedling exhibited for name and that it be named Peffer; to F. H. Chappel, for a large, fine seedling originated by Abraham Murphy of Dane county, and that it be named Murphy.

We also recommend that a premium of $2.00 be given for a display of one and two-year-old bottled cider, by A. G. Tuttle; which we find to be sweet and entirely free from alcohol, the conditions of premium being that he shall furnish for publication in the forthcoming report a statement of the method of manufacturing and keeping.

J. S HARRIS,
B. F. FERRIS,
C. G. PATTEN,
Committee.

REPORTS OF TRIAL STATIONS.

Station No. 1 — Fred A. Harden, Weyauwega.

J. M. SMITH — I am very glad to have these Stations report. I have spent hundreds of dollars in experimenting to find out the kind of a strawberry to pay on my grounds. I have tried varieties and then plowed them under and I can get manure cheaper than that.

No. 2 — M. A. Thayer, Sparta.
No. 3 — A. L. Hatch, Ithaca.

J. C. PLUMB — Now I suppose every Station has a record similar to the one Mr. Hatch has presented. I am glad to see it; they should all have a book. I suppose they all have such a record. I presume you have one, Mr. President?

PRESIDENT — No, I have not but Mr. Tobey and myself are preparing to get out a large plat.

J. C. PLUMB — There should be such a record.

PROF. GOFF — I have the names of everything that has ever been contributed to these Stations and there is no cause for fear of anything being lost.

SECRETARY — With regard to this matter of keeping records I will read the contract between this society and the superintendents of the Stations.

J. C. PLUMB — There has been no contributions for experiments in ornamental shrubs. I think every state is very anxious to experiment on ornamental stock.

PRESIDENT — There has been nothing of the kind at No. 2 unless you call the Japanese wine berry ornamental.

E. H. S. DARTT — I am much pleased for the privilege of attending your Society as a delegate for several reasons. I became of age in Wisconsin. I settled here in '44 in Dodge Co. I attended one meeting of your Society, I drove over with a horse and cutter. I finally drifted over into Minnesota. I think it is a good thing to send delegates to different states, it makes better men of them. I was a kind of a crank in Minnesota and one time they sent me as a delegate to Iowa, it was at the same time our Society was in session (I did not know but that they sent me to have me out of the way) I was very much impressed with the way the Iowa Society did business and I went home and tried to impress Minnesota people with some of Iowa methods. In Minnesota we have a good live Horticultural Society. We have a Central Tree Station in St. Anthony's Park and we have four or five subsidiary stations, the Central Station is over them all; it is the only Station that receives State aid; it was established four years ago. I started it as a Tree Station. I had no example to go by. I did the best I could I had no building at first but now I have one that answers every purpose. I studied out my method in regard to numbering and marking to keep a record of my trees. I divided my plat into four sections and placed the rows four feet apart from west to east. I have fifty rows.

If any of you have any trees or shrubs that you think I onght to try if you will send me the cions I will be glad to try them for the public good.

PROF. GOFF — Mr. Dartt, what do you use for labels?

A.— I use zinc stamped with a die; I think I shall change and use copper as zink corrodes.

Q.— How do you attach to tree?

A.— I use copper wire, I think No. 20 is about right for labels.

PROF. GOFF — I ordered some copper labels but they are very unsatisfactory this year, not much better than wood, they are very thin. I am perplexed to find a permanent label.

C. E. TOBEY — I would like to ask if any one has used any of the zinc labels that are made in a strip?

J. C. PLUMB — Prof. Goff, is the manner of keeping record of these Stations uniform?

PROF. GOFF — They are uniform in spirit but not quite uniform in letter.

J. C. PLUMB — I think it is very necessary there should be a uniformity.

J. S. HARRIS — I spent an hour or two at Mr. Dartt's station, and I can take his book and find anything on the plat without trouble.

B. F. FERRIS — Iowa Northern Horticultural Society did not send a talking delegate here, and I do not propose to take the time of this body. I was asked just before I started if I had propared a paper, and I said no, I was coming here to get all the good I could from this society, and I have been much profited by what I have listened to. I have heard some things that I heartily disapproved of, but I did not feel like giving the experience of an amateur here where there are so many with older experience. I want to say a word to my friend Tuttle about his high-headed trees because I am always telling everybody to let their trees grow low down; let some of the limbs on the south side of the tree grow low down because they will protect the trees from the sun. I do not think it is right for men to go around the country telling farmers to protect their trees with manilla and lath. I sometimes let the limbs on the south side of the tree grow and prune them so they will branch out to protect the tree. When I could let corn grow among the trees I have never had sun-scald.

C. G. PATTEN — It may be some satisfaction to you to know that we in Iowa are working under the same difficulties that you are. We are simply taking the initiatory steps. There were five trial stations at first established and we have added to them until they now number twenty. I think I may frankly say that you have exceeded us; and of Mr. Dartt's station, it must be a model station. We commenced without any funds, the work was done gratuitously until two years ago; then our state gave the small sum of $10 to the station keeper, requiring him to attend the State Society and report to it. Our secretary has endeavored to formulate a set of questions that can be readily answered but that seems almost unnecessary. For the last three years we have been doing a work still further advanced than that, a work of scientific cross-fertilization. Last year the society gave $500, or such part ef it as might be needed for that work. We have cross-fertilized not only the hardiest of the Russians, but we have carried it still farther. we have cross-fertilized the native crab apple. We propose to carry on that work still geater another year; we are experimenting with the plum and the cherry. For the station keeper it is not a paying job. In watching this work I have not agreed with scientific men with regard to the method we should use to secure the hardy apple. I will cite an instance that has resulted in something like a satisfactory demonstration of my theory. I planted seeds of the Perry Russet, this last year three of them have fruited, the apples are all keeping apples but there can be no question but that the Perry Russet was fertilized by the Siberian crab. I think I have so far proven the truth of my theory, that in order to secure a long keeping apple you must plant the variety that has the long keeping qualities; when we use those that have fixedness of variety we will obtain it. Another thought in reference to seedling trees, I hear it said that "you do not know anything about a seedling tree until it is twenty years old," that is because we have not noticed them until our attention has been called to them in some way, they have stood there under adverse circumstances, you graft them and they are tender. In taking cions from trees that have been hardy, in general, those trees will have the hardiness of the parent tree.

J. S. HARRIS — Mr. Ferris objected to Mr. Tuttle's high topped trees. I would not want any trees on my place with more than two to four feet in height. I have seen trees ruined by snow drifts. I think location has much to do with the height; on prairies I would put the tops lower than where the snow would drift in and break them down.

J. S. MCGOWAN — I had quite a crop of cherries last year. I sprinkled the trees with a strong solution of tobacco water and I had a good deal of fruit, some for the boys and some for the birds.

PRESIDENT — I will announce the names of the committee to meet in conference on the Columbian exhibit. J. M. Smith, C. H. Hamilton, A. L. Hatch, B. S. Hoxie, M. A. Thayer. (Chosen by vote of society.)

Adjourned.

SENATE CHAMBER,
THURSDAY, A. M., FEB. 4.

Convention called to order by President Thayer.

SMALL FRUIT IN WAUPACA COUNTY.

F. RICH, Waupaca.

Having been asked to read a paper at this meeting, bearing upon some Horticultural topics, I have selected for my subject, Small Fruit in Waupaca County. I have no doubt, however, that if I had said potatoes, my paper would have been more interesting, as our county is celebrated more on account of its potatoes, than for its small fruit.

But being a great lover of fruit and not much interested in potatoes, I will stick to my text and give you a few thoughts in regard to small fruit in our county.

My first visit to Waupaca county was in the summer of '52. Lumbering had been carried on to some extent along the Wolf river and its tributaries for several years. Previous to this, and wherever there was a pine slashing, blackberries flourished in great abundance. The amount seemed almost unlimited, the few settlers at that time gathered what they could and took care of them as best they could. Some dried them, others put them into barrels and pored on water, thus making a very good blackberry pickle. There was no sale for berries in these days for the reason that there was no one to buy and money entirely out of the question.

As to quality I think they were far superior to any cultivated berries of later years. They were very large and sweet and of excellent flavor. In the course of a few years when actual settlers had taken possession of the land, pine slashings began to disappear and blackberries had to give way to make room for other farm products.

You gentlemen who are now raising your thousands of bushels of cultivated berries may think it strange that I should speak of the wild berries that grew so plentifully in our county in those early days. I think, however, that you will excuse me when I tell you that about all the luxuries the early settlers indulged in was suckers in the early spring and blackberries in mid summer. The end came at last, however, and for several years fruit of all kinds was left out of our bill of fare. The first efforts towards cultivating small fruits of any kind was on a very small scale, and generally resulted in perfect failure, or so near that as to be very unsatisfactory. The wild berries had demonstrated the fact that the soil and climate were well adapted to small fruit, and if we did not have it in abundance it was our own fault.

Farmers' institutes and the State Horticultural society have taught us many valuable lessons. From them we learn that if would raise fruit successfully, we must put the ground in the best possible condition. That we must select our plants with the utmost care, and not be too careless in the manner of setting. We have also learned from experience that thorough cultivation is an absolute necessity, and that mulching is a good thing to keep the ground cool and moist. Also that all plants require some winter protection. These lessons which you have taught us are now being practiced by a large number of our farmers with very satisfactory results. By careful inquiry and observation I think it safe to say that one-fourth of the farmers are now trying to raise small fruit to supply their own tables. Some meet with failure of course, others are more successful, and some raise a surplus for market. Of these I will mention a few.

O. S. Millard, of New London, writes me that he raised last year 850 bushels of small fruit mostly blackberries. He estimates that including strawberries, raspberries and grapes, there were raised 1,200 bushels of small fruit in the vicinity of New London.

I am informed that in and near Weyauwega there were raised about 200 bushels, Mr. Jennie being the largest grower. Charles Churchell, at Waupaca, is meeting with good success. Here is his statement of results from three acres of blackberries one-half acre strawberries. Raised 2,000 quarts of strawberries and 1,800 quarts of blackberries; soil, clay subsoil and ranges from sandy loam to clay loam. Mulched the blackberries with coarse manure in June and cultivated once a week between the rows all summer, or until picking time. Covered strawberries with marsh hay during winter; removed it May 2d entirely from the ground and cultivated between the matted rows. June 1st, it being very dry and vines began to wilt at midday; had water forced into a tank twenty feet above level of berry patch, and pipes laid so that I could attach a hose at different places. Used ¾ inch hose and a sprinkler that would throw water about 12 feet from the center, and allowed that to run in one place until ground was wet 6 to 8 inches deep, this would take from one and one-half to two hours, and use from 6 to 8 barrels of water. I then moved sprinkler to another place and went over the strawberries again the same way in about 8 days; by so doing I got berries well filled out, and as fine berries as I ever saw. On that portion adjoining where no water was used, I got less than one-third of what was grown where water was used.

With my blackberris the constant cultivation between the rows kept fruit and vines growing well until the fruit was more than half grown. Then the constant dry weather began to effect them, and I used the water and sprinkler in the same way. And at each time of watering, about every ten days, I wet the soil through the mulching about six inches deep, and although we had no rain from the time the berries were set to picking time, except twice, which did not wet down more than four inches. I had a fine crop of berries, well developed and good flavor. Where no water was used there was practically no berries. From my experience so far I believe that in ordinary seasons constant cultivation and mulching of blackberries no water would be required, but on strawberries I believe there are but few seasons but that irrigation just at the proper time will benefit the crop in this region. Statement of W. H. Holmes for the spring of 1890 had one-half acre Briton blackberries in bearing, cultivated and mulched thoroughly, had plenty of rain, picked about 1,200 quarts well matured fruit in the fall, dug 4,000 good surplus roots, covered vines in fall in the usual way. Spring of '91 took them up; they were in fine condition and bid fair to produce a crop of 3,500 quarts. But dry weather set in and I only picked 150 quarts; think if I had mulched less and cultivated more would had a better yield; canes grew well, and in the fall took up about 4,000 roots. I cover my vines in the fall with two or three inches of earth. I estimate the crop of small fruit in and near Waupaca at about 200 bushels, and in the county at about 1,600 bushels.

The severe and frequent frosts of last spring, followed by protracted drouth through the summer, had a very damaging effect on small fruit. I know of several fields of blackberries that came through the winter in good condition and bid fair for a large crop, that were entirely ruined. Grapes were badly injured, but not so bad but what we had a few, and these ripened very nicely in the fall.

My paper thus far has been more of a report on the general crop than otherwise. Now I will say a few words relative to my own experience on one-quarter acre of strawberries as an amateur, not as a professional. The land had been used for potatoes and other garden vegetables for several years. Was not in very good condition for berries; I put on a good coat of manure, plowed it in and dragged it until thoroughly pulverized. I ordered plants from Mr. Tuttle, of Baraboo. The plants were on the road five days, but arrived in good condition, and immediately set. This was the last week in April. The weather was very favorable, and I did not lose more than two per cent. I gave just ordinary care, cultivated several times during summer, and kept them free from weeds, except parsley, that was too much for me, and after quite a struggle I gave it up. I covered the vines in December with marsh hay. This was removed late in the spring, and I had no further trouble with them until picking time, when I harvested thirty-five bushels of very fine delicious fruit. I do not boast of this as being a large yield, but to me it was very satisfactory. And what I have done in that line can be duplicated by any farmer of ordinary skill and intelligence. And to all such I would say, go and do likewise.

THE NEW FRUIT CULTURE.

By A. L. HATCH, Ithaca.

"There is nothing new under the sun." But once, however, in the life of each of us everything under the sun is new. If in fruit culture there are methods not generally practiced by fruit growers, and if these methods are based upon a sound philosophy and giving results better than the average, then such methods may well be termed "the new fruit culture." When a practice overcomes difficulties that have baffled the average cultivator for the last twenty years, then an understanding of the better way may come like a revelation to many of us.

This we believe to be true of strawberry culture as practiced by Mr. Wm. Von Baumbach, of Milwaukee county, as told by Mr. Stickney at the summer meeting of this society. Seventeen hundred bushels of berries from four and fifteen-sixteenths acres last summer, and a large average crop for years attest the superiority of his methods:

Many of our best cultivators remove the first runners that appear upon the plants of new set beds, unless the weather is unfavorable to growth. The object is to get the plants well established before runners are allowed to form new plants. When new plants have filled the ground to form matted rows two feet wide all runners are cut off in hoeing. The tendency of runners forming at this stage of growth is to push out sidewise from the row.

In common cultivation the runners are drawn along and doubled back against the row and considerable hand labor is necessary. If neglected, many small plants are crowded into the row and a host of them are too small and weak to bear fruit and stand drouth the next season.

To cut off these runners and to keep the beds true and even, Mr. Baumbach used an attachment to his cultivator, consisting of two rolling cutters. My blacksmith made me one at an expense of two dollars and I used it upon a Fuller & Johnson one horse steel cultivator—used generally for cultivating corn, potatoes and tobacco. For strawberries use but five teeth and set the cultivator sixteen inches wide. The cutters are set eighteen inches wide, and roll along one on each side, near enough to act as a shield, but not to interfere with good work by the hind teeth. The cutters are seven inches in diameter and adjustable to depth. With rows three feet and a half apart, this cultivator would leave rows of plants two feet wide and clear spaces between the rows a foot and a half wide. When properly used the attachment would cut the runners without changing their position.

One of the problems of strawberry culture is their spring treatment. Some advocate the removal of the winter mulch from the plants, and to leave it in the clear spaces between the rows. Others advise letting it remain just as it was through the winter, and allow the plants to come up through the litter. Others still, advocate removing and covering entirely and giving hand cultivation to check the weeds and give the plants a little mellow soil. Neither of these plans are entirely satisfactory, and one of them at least is disastrous in some seasons.

If the mulch remains undisturbed, the ground is kept too cool at the time of bloom, a very critical time it may be especially if the weather is frosty or nearly so at night. It has been proven by an investigation that the temperature of a mulched surface is from five to seven degrees colder than a well cultivated surface. This difference is, in many seasons, sufficient to make a failure from loss of bloom by frost. Even if removed to the spaces and the weather is frosty after a rain, the ground is cold and wet, and knotty green tipped fruit results. The well-known need of moisture for growing the strawberry has doubtless led to the use of spring and summer mulching out of season, and when its use is an injury rather than a benefit. This is especially true of the last dry years when drouth has been so hurtful to the strawberry crop.

Mr. Baumbach removes the mulching entirely in the spring at the beginning of the growing season, and places it in wide spaces left at convenient distances through the field. The cultivator is run through the spaces and its use repeated as often as needed until near the time when the fruit ripens, then cultivation ceases and the mulch is placed between the rows. Since the spaces are true and the borders on the rows are even cultivation by horse power is possible, and good tilth is secured, the soil is allowed to warm up when it is so desirable in the early growth of the fruit, and when the summer heat is more intense, the mulch is returned, not only to keep the fruit clean, but to retain moisture during the picking season when cultivation is not practical. After the fruit is off the tops or vines are cut off and removed, the beds top dressed and cultivated well the rest of the season and are expected to yield a second crop about equal to the first.

DISCUSSION.

WM. TOOLE — I do not think we have ever had anything put in better shape about the management of runners in matted rows than in the paper before us.

A. L. HATCH — Mr. Baumbach is entitled to the credit of the manner of cultivation I have presented to you. To me it seemed like a revelation and for this reason I wanted to bring this out and give Mr. Baumbach the credit of this new method of cultivation. I have given a very fair explanation of it. I was very careful to get it of Mr. Stickney.

A. G. TUTTLE — I saw Mr. Baumbach's plat and if there is anything that is perfection it is his method of cultivation, and I think he has given us a system that is ahead of anything in the United States.

F. RICH — Will not mulching have a tendency to retard in the spring?

A. L. Hatch — We came to the conclusion, Prof. Goff and I, that we could not materially retard the time of bloom, that we could not, by mulching, bridge over that period of frost. When the season has advanced so that you have got your bloom, mulch has a tendency to retard and it made a difference with me between a crop and no crop at all. If you can keep your bed from getting down to the freezing point it may have the desired effect.

J. S. HARRIS — Mr. Baumbach's method is to take off plants first. You remember I took you to task last year because you took your plants off too late in the season. The early runners are the best plants. I have a neighbor who thinks the early runners are not good, that they are too weak, and he takes off later in the season. I raised 250 bushels to the acre while he did not have any crop at all because his runners were too weak, they did not get thoroughly rooted.

J. M. SMITH — I was not aware that Mr. Baumbach's system was new or anywhere near new. I have seen his grounds and his method of cultivation, and think he is one of the best cultivators in the state. About thirty years ago, I lost a crop of berries by uncovering too early; frost came late and destroyed nearly one-half my crop; since that we have always left the covering on; we leave it on until the plants start underneath; then take it off and put on ashes. Work the ground carefully and get it warmed up as soon as possible, and by practicing this method we have not had a crop injured by frost for a good many years. We do not like trunk plants, that is plants grown too near the main plant. I sold Mr. Baumbach those plants from which he got that immense yield. He sent for plants but did not say anything about the price. I wrote to him that I could not sell plants for the same as other dealers furnished them, that my plants were strong plants. He wrote back he did not care anything about the price he wanted good plants. "Now send me so many thousand." I sent them and he wrote: "I do not wonder that you cannot afford to sell plants the same as other dealers, I never saw such plants. I do not see how they can be grown." Mr. Baumback's system is not new at Green Bay and was not new there twenty years ago.

C. G. PATTEN — The rule then is this, take off the mulch when the plants start.

C. E. TOBEY — Mr. Smith, do you not hoe off any runners.

J. M. SMITH — No; I let every runner remain. I put Warfield's three feet apart each way, Wilson's two feet apart each way. The Warfield's will then fill up the ground. We consider 200 bushels a good crop and 300 bushels a large crop.

A. L. HATCH — You admit Mr. Baumbach's method to be a good one, he does everything by horse power, you by hand; is your land any more valuable than Mr. Baumbach's land? His yield has been obtained at a less cash expense than yours, and he has had a greater yield than yours.

J. M. **SMITH** — I do not know that either.

A. L. **HATCH** — You admit that it costs you $25 an acre for hand work, that is more than my land is worth.

SECRETARY — There is no question about Mr. Baumbach's yield. I wrote to the commission man who sold his berries, asking him to be present at this meeting, but he has not come. I also wrote to Mr. Baumbach, but he and Mr. Stickney are in California.

PROF. GOFF — That is a new thing to me, cutting off runners by horse power.

J. S. **MCGOWAN** — Mr. Schofield in the town of Plymouth used several years ago a little hand cultivator similar to this horse power, and I am not sure but that the principle was taken from the little hand machine.

J. S. **HARRIS** — A man to be successful in any business has to use some brains. If I leave mulch on the plants on my premises the vines will be so tender that I will lose all the crop. I do not use the early runners for setting, those later in the summer would be better, but early ones are the best for fruiting.

GEO. J. KELLOGG — I can see nothing in favor of removing mulch and cultivating between the rows. I believe if that crop of Mr. Baumbach's had been measured by picking up odds and ends there would have been another one hundred bushels; he raises more berries than Mr. Smith.

C. G. **PATTEN** — I wish to offer a thought on the subject of mulching applying to the raspberry instead of strawberries, and while it may not be good for every grower it may help the general grower. I cultivated three or four times a week to get as much moisture as possible. I found that it had a tendency to move the earth out of the row. The drouth became so excessive that the ground began to crack. I put on mulching scattered between the hills and carried that patch of raspberries through the excessive drouth and never had so good a crop of fruit.

C. E. **TOBEY** — Our method of mulching is very similar to the new method Mr. Hatch speaks of, but we do not let any runners or any blossoms appear on our beds the first season. We experimented last year with mulching, letting some stay on one week or two weeks longer than on others. We do not cultivate more than two or three times in the spring. I did not understand how Mr. Baumbach puts on his mulch; he removes and then puts back after cultivating, does he?

PROF. GOFF — He leaves a row occasionally where he puts it.

C. E. **TOBEY** — We employ girls who want one or two hours' work; they go in the row and pull or jerk off the runners. Our rows are three feet apart and the plants two and one-half feet in the row. I think next year we will put them all three feet in the row.

Q. Does Michel's Early bear well with you?

C. E. TOBEY — Yes. It is a very fair bearer with us.

Q. Is Michel's Early good as a pollenizer?

C. E. TOBEY — Yes, and the Jessie is good.

J. S. HARRIS — It is a shy bloomer.

WARREN GRAY — I retarded by mulching and it retarded the crop about two weeks.

PRESIDENT — I think the season has as much to do with the time of fruiting as the mulch, and the last season was a peculiar one in this respect.

WINTER PROTECTION OF SMALL FRUITS IN WISCONSIN.

BY WARREN GRAY, Darlington.

The several past mild winters have had a tendency to cause us to become careless in regard to winter protection. During the last three or four seasons small fruit in southwestern Wisconsin has suffered but little injury when unprotected. But, remembering what a Wisconsin winter *has* done, and realizing what it *may* do again, we consider it wise to insure our crop by covering. Besides there is some advantage in putting down and covering berry bushes, more than the winter protection. The mellowing of the soil close around the roots of the plants in loosening them preparatory to laying them down, gives them a more thorough cultivation than they would be otherwise likely to get. Granted that winter protection is necessary the question arises, what is the best and cheapest method? I have practiced several methods, but greatly prefer the following: We loosen the earth around the plants and bend them down, placing only enough earth on them to hold them down, afterward finish by covering them out of sight with stable manure, thereby forming an excellent winter protection and at the same time a good fertilizing. If manure is scarce a little will do, but plenty is better. The manure can be applied any time after the ground is frozen, but before severe weather sets in. We use no stakes or wires for supports and can drive a team astride each third row, covering three rows at a time.

We plant blackberries in rows running due east and west, nipping off the new canes at one and a half to two feet, making low stocky plants. In putting down we lay the canes all the same way, a little north of the row, either to the northeast or northwest, and find if when taken up in the spring they are left imclining about ten degrees from perpendicular, the majority of the fruit is borne on the north side of the row and is protected from the sun's rays by the foilage of the new canes which spring up perpendicularly. We always find the largest and best blackberries where they have ripened in the shade. After fruiting we leave the old canes without cutting until spring as they assist in laying down, and also serve as a partial protection. We change the direction in laying down each year. That is if we lay them to the northwest this year, we lean them to the northeast next year, thus the old canes will naturally come on the top of the new growth each time.

In handling red raspberries we reverse the method and put them down on the south side of the rows as they ripen their fruit best in the sunshine.

As to the cost of covering, two men, one with a round pointed shovel the other with a wide spreading two-pronged fork, can easily lay down and slightly cover one-half acre in a day of ten hours. And one man with a team can finish covering the same in the same time with manure.

Strawberries may also be protected by a coat of stable manure, but it should first be packed in a solid pile and allowed to heat enough to destroy all seed in it.

C. E. TOBEY — Mr. Gray says two men can lay down one-half acre in a day.

A. Yes.

C. E. TOBEY — Well that is a pretty good day's work.

WARREN GRAY — You can hold down the new canes better if you put the old canes with them, they also serve as a mulch; remove the old canes in the spring.

C. E. TOBEY — Do you think it is as well for the new canes to let the old ones remain, do you not think there is life enough in them to injure the new canes by leaving them on?

A. No; they will not hurt them at all.

Q. Do you mulch with manure?

A. Yes.

Q. How many acres do you grow?

A. Five acres. My oldest berries have been growing from eight to ten years. I picked the best fruit from the oldest plantation. I am not at a loss there, I know how many I picked and how many I marketed.

J. S. HARRIS — Can you tell us of any remedy for the blackberry rust?

GEO. J. KELLOGG — I know of nothing better than to dig them up and burn them on the spot.

C. H. HAMILTON — I have never been troubled with the yellow rust to any great extent. In the fifteen years I have been growing them I have never seen more than ten hills affected with it. I have seen more Kile's affected with rust than Stone's Hardy or Briton. I have never seen over three hills on my plantation that were affected with rust. I have a neighbor who had the rust settle on his crop of raspberries quite extensively. I called and advised her to dig up each hill affected with it. It is like the rust on a stove pipe and has a very offensive smell.

Adjourned.

THURSDAY AFTERNOON.

A. J. PHILLIPS — I would like to ask what constitutes a delegate to this society?

SECRETARY — All local societies reported to us are entitled to have the expenses of one member, who shall be sent as a delegate, paid by the state society.

A. J. PHILLIPS — We have a local society but I have always come here and paid my own expenses.

GEO. J. KELLOGG — I move that we recognize Mr. Phillips as a delegate to this society and that his expenses be paid by us.

Carried.

PRESIDENT — We are organizing new societies all over the state and we are receiving invitations to go to new places all the time, and unless we get an appropriation from the state we cannot pay the expenses of delegates to these places. Under the present method of paying expenses of delegates to the state society it takes considerable funds to do it, and I hope it will come up at some time to be settled with regard to what we shall do about it.

SECRETARY — What better time can we have than to settle it in a committee of the whole? A society may write to one of the executive committee to visit them, and in a month some one else may write from some other society and so on; it takes a good deal of money to send members to answer these calls. The way is for the secretary to be notified by a society when it is in need of help.

PRESIDENT — Have you some plan to arrange this?

SECRETARY — I have no better plan as this has always worked well, but we must increase our membership or drop it unless we succeed in getting a larger appropriation.

J. S. HARRIS — After a society gets well started it ought to charge enough for membership dues to be able to afford to send three delegates to the State convention and it would be better for you than to pay the expenses of these local delegates. Help weak societies to get on their feet and then let them pay the expenses of their delegates and send their reports

PRESIDENT — It seems to me that a resolution of this kind is what we need: Each local society shall be entitled to a delegate to the State Society and to have one or two members from the State sent to a new society. Then let each local society determine if it shall send a delegate to the Summer and the Winter meeting or if it shall have a delegate sent from the State Society to its own meeting.

J. S. HARRIS — There ought to be some appropriation for this matter of delegates. The whole State ought to realize its importance and the voters ought to realize it just as much as it does the State University.

The secretary introduced the following resolution regarding delegates to the State Society, which was adopted:

Whereas: The financial condition of our Society will not warrant the payment of the expenses of a delegate from each local society to our annual and semi-annual meetings; Therefore,

Resolved, that each local society be entitled to one delegate a year to represent them either at the annual or semi-annual meeting or in lieu thereof some member of the State Society shall be sent to them as a delegate who shall address them at a public meeting.

SYNOPSIS OF THE WISCONSIN FERNS.

BY CHAS. A. CHANTER, Kilbourn City.

Mr. President, Ladies and Gentlemen:—You are all lovers of flowers and fruit, but what would your lovely bouquet be without the delicate ferns to give it grace and beauty; and does, not yonder dish of fruit look more inviting in a nest of verdure? What high class conservatory is devoid of ferns? Ferns are as essential to floral decorations as the trimmings are to a lady's dress, and this is the relation they bear to horticulture. According to Professor Eaton "our best authority on American ferns" there are at least 59 distinct species in North America, 37 of which are found in Wisconsin.

The inexperienced ramble through the woods plucking every fern and wild flower that comes within their reach, and after obtaining a valuable bouquet, throw them away, thereby destroying some lovely annual which will probably never appear again in that locality. The roots of those ferns so carelessly trodden under foot are catalogued at from 25c to $1.00 each. How much more interested the rambler would be if he had some idea of the value of these ferns, and by some distinguishing peculiarity, the different species could be identified, and it is with this object that I venture on a brief explanation.

Please examine the back of the frond; here you will probably perceive several spots, called spores, these contain numerous seeds or sori, held in small cells by elastic rings; which finally burst and scatter the invisible seed broadcast, and it is by the position of these spots or lines that we are able to distinguish the different species.

When these spots are covered with a scale, they belong to the Aspidiums, or scale family, without the scale they are polypodiums. If lip-shaped they are Aspleniums. Situated on the margin of the frond it is a Pteris; on the midvain it is a *Blechnum,*[*] and various other formations of sori on the back of the frond by which the ferns are classified; but in the Osmunda, Onoclea and Thuthopteris, the seed vessels are separate, and are thereby called flowering ferns, and have no spots on the back of the fronds; likewise the Botryclium or Bunch of Grapes Fern, and the Adder's Tongue which are complete plants in themselves, the fertile portion starting out of the center of the frond. So with very little study one can easily discern one fern from another, and it is absolutely necessary that we should speedily become acquainted with the Cryptogramic family, as the ferns are destined to play a very prominent part in the fashionable world, and will be the favorite decorative agent furnished by the leading florist.

---

[*] There are no Blechnums in Wisconsin, but will be.

The "Morning News," of the 6th of January, devoted over a column to the subject and speaks of the Dells as being the best locality for them. The "Tribune," of the 10th, says: "The latest outcome of this *higher education* in the *ethics of color*, is that the Fernery with its cold verdure and mosses, is to supplant the conservatory of tropical bloom in the household."

Our last summer's meeting was favored with some highly educated gentlemen of Chicago, who took the fern question up pretty warmly, and published in full detail all that was said about them.

Hoping our much favored state, so magnificently endowed by nature, will not allow one of its greatest attractions to be unnoticed and unknown, I will conclude this short synopsis, but before I take my seat allow me most respectfully to wish this honorable society every success in their glorious undertaking and trust they will not take a second place in the World's Fair.

USE OF FERNS.

To minister delight to man.

To beautify the earth.

Pith of fern contains starch good for food. Fine fodder for cows, etc. Male fern remedy for tape worm. Osmunda for rickets. Adiantum, pectoral. Lastren Fragran, good tea. Polypodium Phymatodis yields an aromatic oil, etc.

WM. TOOLE — Have we any annual ferns?

A. No; not in Wisconsin.

WM. TOOLE — So far as my experience goes it is more easy to grow ferns than was at first supposed. Have you had success with the Walking fern and the —

CHAS. S. CHANTER — You will have no difficulty if you plant your fern in the crevice of the rock where it will get no sun.

WM. TOOLE — They are a beautiful fern in the Wardian case, but the Walking fern does not do well with me.

CHAS. S. CHANTER — It grows best on a rock with very little soil and in a shady corner. If you put ferns in their proper order they will grow; if you put the Osmundi on a rock it will not grow.

By a vote of the Society Chas. S. Chanter was made an honorary life member.

Mr. Chanter returned thanks for the honor and said he did not expect such a courtesy would be extended to him from the Society.

PRESIDENT — We have with us this afternoon, Mr. Braddock, from Mather, Juneau county, a large cranberry grower, and president of the Cranberry Growers' Association, and we would like to hear a few words from him.

W. S. BRADDOCK — I did not come expecting to make any extended remarks. In fact the results of the last year among the cranberry growers were such, that like Antony in his oration over the dead Cæsar, I might show you the wounds and bid them speak for me; for certainly, the trials and losses which our people have sustained through drouth, and frost, and fire, are far more eloquent than any words of mine. There is, however, this broad distinction. The body in whose behalf I appear is by no means defunct, but is full of life and energy. It is a kicking body, as some of our political friends are likely to discover when the votes shall be counted the next election. But, though youthful, that we are a strong and vigorous organization a brief glance at the statistics, which are submitted at the suggestion of your president, will clearly show. It is estimated that there are over 55,000 acres of cranberry land in the state, of which only about one thousand acres are under the highest condition of cultivation, having been improved by turfing or sanding at a cost of from fifty to one hundred and fifty dollars per acre. There are about 8,000 acres of natural bog under cultivation which have been improved by ditching, setting vines, etc., at a cost of less than thirty dollars per acre; and some 20,000 acres of natural, or as it is termed, "wild marsh, not improved." Besides this, there are over 26,000 acres suitable for planting, but without vines. The amount of capital invested in improvements is over $650,000.

The average crop for the past seven years throughout the state is forty-seven thousand, seven hundred and fifty-seven barrels, and it is estimated that the sum of two hundred and twenty three thousand, two hundred and twenty-one dollars was paid for harvesting our crop one year ago, when the yield reached an aggregate of seventy-four thousand, four hundred and seven barrels. And yet, cranberry growing in Wisconsin is, to a great extent, still in its infancy. At present, improvement is limited chiefly by the water supply; but plans have been outlined, by which, if the water in our rivers can be made available, these wild lands will become very productive and very valuable, and cranberry culture will be classed among our leading industries. These things are said not in a boasting spirit, but to impress upon you the importance of having the Cranberry Growers' Association, whose exhibit will be made under the auspices of the Horticultural Society, properly represented at the World's Fair. We have not formulated our plans, as yet, but have thought that it would be a unique plan, and one not likely to be duplicated by the eastern growers, to have a cranberry marsh on a small scale, with ditches, dams, reservoir and growing vines all complete, made a part of our state exhibit at Chicago. A small plat of fifty or sixty feet square would be sufficient for the purpose.

I would be glad if your society would add to the encouragement which your president has already given me, so that we might unite our forces and work together in trying to secure a suitable appropriation for making a creditable exhibit at the World's Fair.

GEO. J. KELLOGG — Have you statistical figures to show the amount of water for the last twenty years; that is, whether the water supply is less on account of drouth, or has it been decreased by cutting off the timber in that portion of the state?

W. S. BRADDOCK — I think it has been lessened by drainage. It is a level, marshy country, chiefly peat bogs, and the timber cuts but little figure, being mostly on islands. It is the peat bog that acts as a reservoir to hold the water. I do not think the water supply has been decreased in quantity by cutting off the timber.

SECRETARY — I suppose without any doubt cranberries will go into the Columbian Exposition as a horticultural production. Our interests are nearly identical, and so far as we can we would like to have the reports of the Cranberry Growers' Association go into our volume.

THE TOWNSHIP LIBRARY.

BY F. A. HUTCHINS, Madison, Wis.

In 1887 the legislature of Wisconsin passed a law intended to secure the establishment of a library in each township of the state. The books of each library were to be divided among the several districts of the town for the use, primarily, of the schools and, secondly, of the citizens. In 1889 the law was amended and made more simple. It authorizes each town treasurer to withhold from the state school money, which he receives in June, ten cents for each person of school age in the town. The money withheld constitutes a library fund. The town clerk is directed to expend the money so reserved for the purchase of books selected from a list prepared by the state superintendent. He then distributes the volumes among the districts in proportion to the amount withheld from each. He is also authorized to collect and redistribute the books as often as he deems necessary, "to the end that each district may have the use of all the books purchased."

The experience of the first few years' operation of the law proved that the simple books, those designed especially for the use of the schools, were doing the most good. It also proved that among the great number of books that were good, *i. e.*, wholesome in thought, pure in style and worthy in matter, there were certain ones which possessed a great charm for all the boys and girls — books which the pupils needed no urging to read and whose uses were plain to the average teacher.

It was also found that these volumes were so frequently read or of such constant use for reference that they were needed in each school all of the time. Town clerks were therefore advised to buy a copy of each of these books for each district library before buying other books of less value to be circulated.

At least one-half of the district schools of the state have now been furnished with libraries under this law and, except in a few instances where the early purchases were of too difficult books, the result has been a strong uplifting of the purpose and work of both teachers and pupils.

The younger pupils, weary of the oft-heard and oft-read fragments of their regular readers, have turned to these charming volumes with a genuine interest that has urged them on to learn to read for the pleasure that reading gives. With practice in reading and an increasing love of good books their interest in the regular studies has grown and school life and work has lost many of its irksome features.

These books, it must be remembered, are the few choice masterpieces, culled from thousands by the best instincts of the children themselves; books which delight, inform and instruct; books which only the rare geniuses produce but which, by that very token, furnish food for the minds of all the healthy-souled boys and girls.

This reading serves many purposes; it gives new words and their forms, practice in reading, familiarity with the best forms of expression; it starts the imagination on wholesome lines, stimulates the power to think and the habits of observation, broadens and supplements the class work, stores the mind with valuable information and inspiring thoughts and, finally, contributes to founding a life-long love for good books and other good reading. It furnishes to the teacher the suggestions and materials for widening the usual school work and places at her command some assistant teachers whose work may follow her own in parallel lines and offers her daily counsel and inspiration as well as assistance.

The small amount of money appropriated allows but about five dollars a year for the purchase of books for the average school district, but that amount, wisely expended each year for four or five years, will give a library that contains the cream of the world's literature for children. It gives to the poorest boys and girls of the school the chance to read and re-read the best thoughts of the wisest and noblest men and women; to study the classics of the great masters until their own souls are enkindled with these burning messages.

We must not forget that books have two great missions — to give information and to give inspiration.

Our schools should not be contented to give children knowledge, solely — their main duty is to aid in building character, to give boys and girls an impulse that will lead them on to become good men and good women.

Good books help in both lines. They give to the child a wider range of information than his text-books furnish. While, for instance, he is studying in his geography about some foreign land the library gives him further facts about its inhabitants, their customs, habits, government and history, about the animals, plants and natural features, about curious, beautiful and wonderful things that attract his curiosity and arouse his interest so that the lessons of the text-books appeal to an awakened imagination and are easily held in memory.

In short in the mere matter of instruction the library adds that interest and delight which makes study a pleasure.

It is, however, in furnishing inspiration to better thoughts and lives that the library gives its highest service. In the biographies of our nationa heroes and heroines it gives the clearest pictures of the best types of American manhood and womanhood, and stimulates high ideas and aspirations.

It teaches courage, patriotism, devotion to duty, and the humbler virtues of daily life, honesty, hopefulness, kindness, courtesy and perseverance It gives better and higher aims and furnishes, in song and story, the tale of kindly, brave and generous deeds to excite the emulation of active, growing, plastic minds.

To you, as members of a society devoted to a more careful study of horticulture this movement for libraries must appeal with especial force. It is, unfortunately, too true that our schools have done little to interest the boys and girls of the rural districts in the study of the beautiful and wonderful things which nature has scattered so lavishly about them. The meager text-books of the schools have not given to the young and untrained teacher either the material or the inspiration for this study. The young people who will spend their lives in close contact with the fields and forests, with flowers and plants, with birds and domestic animals, who see, in the springtime, growing wheat and maize, springing grass and waving boughs, are not trained to that habit of close observation of natural forms which will give them both pleasure and profit in mature life.

It is part of the purpose of this library movement to place in each school a few simple and interesting volumes about plants and animals and land and water forms which shall inspire this loving study of nature.

SECRETARY — We have been much entertained and I have no doubt all have been benefited by this paper. I am sorry this room could not have been filled with listeners.

A. L. Hatch — What would be the cost of that case filled with books?

F. A. HUTCHINS — I think the case and all would be about thirty dollars.

GEO. J. KELLOGG — Is the case you have shown large enough for a district school of twenty-five pupils?

F. A. HUTCHINS — If the town treasurer withheld the money the average district would have about as many as that in five years. I carry this case of books around with me because there are certain people who seem to think a school library means a great big affair, that is, difficult to take care of. I think the child who has carefully read and re-read the thirty best books selected from the list of 9,000 would have more knowledge than the one who read the whole 9,000.

REPORT OF GEO. J. KELLOGG,

DELEGATE TO NORTHERN ILLINOIS HORTICULTURAL SOCIETY.

Mr. President, Ladies and Gentlemen: Pursuant to promise we found ourselves at Dixon at the opening session of the society; there was a good attendance of horticulturists throughout the district. All papers were short and to the point, discussions were pertinent and the interest did not flag. Exhibition of fruits was very light. The ad interim committee did not report to this district society, and much of the benefit of the past season's labor must be gathered from their incoming volume.

Full half of the papers on their programme were read by others than their authors, which detracted much from their merits; the papers by the ladies were among the best read. Only the O. J. Farmer was represented by all the agricultural papers of the state, and not a word said for the horticultural press. The local committee provided conveyances for members and delegates to visit the extensive milk condensing factories (recently completed at a cost of half a million dollars), and the shoe factories employing about four hundred operatives.

The election of officers resulted in the choice of J. V. Cotta, Nursery, Ill., as president; Arthur Bryant, D. Hill and others as vice-presidents; Prof. J. L. Hartwell, Dixon, Ill., recording secretary; L. Woodward, Marengo, treasurer.

The selection of the time and place of the next meeting was left with the executive committee, with the probabilities that it will be held the first week in December, at Dundee, Ill.

Your delegate was very cordially received and the fact that southern Wisconsin and northern Illinois horticultural interests are identical makes it of the first importance that the closest fraternal relations be cultivated and that the interchange of delegates and volumes be continued, and by a resolution, their society were to send a delegate to meet with us at this session.

The failure of the old orchards all through the northern district is as serious as in Wisconsin, and comes from much of the same causes, want of good locations, proper soil and selection of hardy varieties, the proper cultivation of the orchard, the formation of the top by pruning at planting and the protection from sun scald and insect depredations. The great failure in A. R. Whitney's orchards at Franklin Grove, Ill., has induced him to plant a new orchard of 12,000 trees, doubled worked on hardy and congenial stocks. His faith is shown by his works and leads us more fully to recommend the testing of double working by our trial stations and to planters, and we would recommend our readers to carefully study Pres. Cotta's papers and illustrations found in our own volumes.

The reports were conflicting in regard to spraying orchards the past season. Those who did not spray their orchards were nearly as free from insects as those who did — one man in his paper claiming that London purple prevented apple scab, while those who used no insecticides or other solutions were also free from scab, showing that the first principles of the application of arsenites are not understood.

Respectfully submitted,

GEO. J. KELLOGG,

Delegate.

REPORT OF GEO. J. KELLOGG,

DELEGATE TO WESTERN IOWA HORTICULTURAL SOCIETY.

It was our privilege to meet with this society December 9th and 10th, at Council Bluffs, at their annual meeting. The display of apples was the finest I ever saw outside our own state exhibitions in the winter, except at New Orleans. Ninety-one varieties and about 500 plates by twenty exhibitors.

Mills county took first premium, Pottawattamie county second. F. M. Powell, of Glenwood, with 65 varieties, took first in individual collections. Iowa is a strong competitor and will be hard to beat in 1893. The program issued by the secretary, Geo. Van Houten Lenox, was diversified and attractive, but the rendering was varied and disappointing, many persons failing to respond.

R. D. McGeehon, of Atlantic, read a paper on small fruits, fully confirming my good opinion of Wood, Earle, Crawford and Warfield.

By resolution they dropped the names Beeder and Racster, simply calling it Wood; he placed Capt. Jack at the head of the old varieties for pollen; he also placed Older as the best black raspberry.

Mr. S. H. Redmon, in his paper on Red Raspberries, advocated no pinching till August and September, and then only to ripen up the canes.

The attendance at the convention was large, and by active young men, and by most of the men who have grown gray in the business.

I have a bulletin showing the recommendations by 61 members, a list of apples for commercial orchards, 26 varieties are named none of them receiving less than 4 votes, and only 7 of the 61 agreeing on 20 varieties. Ben Davis received 52 votes.

For family orchards 65 persons recommend 25 varieties, Duchess receiving 56, the highest number of votes, while in the commercial list it had 32 votes, and Ben Davis which received the highest in commercial, for family it received 36 votes out of 65.

I also herewith present their program and premium list for that winter meeting, being their sixteenth annual session.

Bulletin states that 51 varieties for commercial orchards, not tabulated.

Bulletin states that a long list for family orchards, not tabulated.

Bulletin gives a list of other fruits.

Cherries — 51 votes for Early Richmond, 5 others mentioned.

Plums — 30 votes for De Soto, 29 for Miner, 5 others mentioned.

Grapes — 58 votes for Concord, 39 for Worden, 7 others mentioned.

Blackberries — 48 votes for Snyder, no others getting more than 4 votes.

Raspberries — 41 votes for Gregg, 24 for Turner, 7 others mentioned.

Currants — 23 votes for Red Dutch, 10 for Fay, 4 others mentioned.

Strawberries — Crescent 46, Capt. Jack 23, Bubach No. 5 23, Warfield 13, Downing 12, Jessie 9, Wilson 8, Mt. Vernon 5, Glendale and Windsor Chief 4 each, with a long list of one to three votes each.

REPORT OF A. J. PHILLIPS.

DELEGATE TO IOWA.

This meeting was held at Eagle Grove, December 14, 15 and 16, A. D. 1892. Convened at an unfavorable time, as the roads were almost impassable, but the trains brought in many from Iowa and other states who were interested in the work and progress of the society. The president of our state society, M. A. Thayer, being among the number, whose answers to the questions on small fruit culture were well received. The difficulties in apple culture were fully discussed, and are about the same as in Wisconsin. A plan to adopt a list of varieties for their locality was adopted, which I think will give good satisfaction. It is for the secretary to obtain a list of the varieties as each grower or member deems best, and then to select as a list those that have the most votes of the various growers. Shade and ornamental trees received a good share of attention. That society seems alive to the importance of making a good show of fruit at the coming world's Fair. The most attractive apples in the large fruit show were several plates of the Malinda, a handsome long-keeping variety originating in Vermont. As is usual at this season of the year, but few of the new Russians were seen on the tables, convincing the grower that we must look largely to our native varieties for our winter fruit. Prof. Budd from the Iowa college was present, and answered many questions. The veteran grower of Sun Scald fame, Edson Gaylord, was present, ever ready to defend his theories. But I must say after examining it on his own premises, his plan of planting three trees in one hole, eighteen inches apart to protect each other, I cannot recommend. I made for him a lath protector which I think he will like better. The efficient secretary, Mr. Elmer Reeves, was re-elected, and Henry W. Ash, who attended our meetings, was elected president. The society decided to hold its next meeting at Humboldt next winter. Resolutions of thanks were tendered Wisconsin for sending delegates, and an invitation extended to us to do the same thing next winter. After choosing delegates to the Wisconsin and Minnesota meetings, the meeting adjourned. Every one present testifying that it had been a pleasant and profitable session.

DISCUSSION.

E. H. S. **Dartt** — I think I told you that I thought one of the great benefits of sending delegates to other societies is the benefit to the delegate himself. It was a benefit to me to be sent to Iowa and I gathered up all the good I could and brought it home and I hope the seeds have taken root and that some of them have grown. I think it did our Society good. I think Mr. Harris a better man than he used to be before he was a delegate. I think the Society in Iowa is organized about right. The state is divided into five districts and the expenses of the delegates from these districts are paid by the state Every member of the legislature knows he is near a fruit district and he has a greater interest than if he lived in a remote portion of a district comprising a large area. If you wished for an appropriation from your legislature you could show that the interest in horticulture has spread all over the state, but if you did not the members might say to you, "it is only a local thing and there is not much need of a state appropriation. If you want direct information about the work in Iowa, Mr Patton can give it to you direct.

President — It seems to me that we ought to provide a way by which the surplus of our stations may be given to the children. To the first one thousand children, put on the list, that will set and care for them, I will give one half-dozen strawberry plants each.

C. G. **Patten** — I do not feel like occupying the attention of your Society, but will say that our system of directorship works very well. We have endeavored to group the different portions of our state so that we can make a report that will correspond with the whole section. With the reports from this directorship and from the twenty Experimental Stations we will get thirty-two reports coming from all portions of the state that at once establishes the foundation of a good society; from the further fact that some of our Stations are passing the infancy period we should have something more of interest to report. I see that you have different lists in the reports of your Trial Stations. Why should you take up the time of your Society in reading the long list of these Stations? Simply report those that have failed. I throw out this remark hoping you will help us to get the better way and simplify our reports.

Adjourned.

ASSEMBLY CHAMBER,
THURSDAY EVENING.

Joint session with Agricultural Society.

President Thayer in the chair.

CHARACTER BUILDING IN HOME AND SCHOOL.

By PROF. J. LIVINGSTONE, Sparta.

The coming together of those united by kindred calling and sympathetic taste is both profitable and pleasant. From these meetings you carry back to farm and garden fresh courage and new inspiration. In them I revive memories of early life upon the farm, and catch anew the old fire of youthful longing. The ambition of my boyhood was to become a gardener. Fortune — or rather lack of fortune — forced me into another garden, and cordial love for the work has so far kept me there.

What seemed once unkind fate, turning the boy from his chosen calling, has proved a kind providence, granting the high privilege and rare pleasure of cultivating plants of a high order. To these human plants we must give years of watchful care and fostering skill. To bring the fruitage of ripe character, we must furnish the nourishing soil of knowledge, the clear atmosphere of purity, the warm sunshine of loving sympathy.

The early love for flowers and the old-time relish of out-door life remains. What was first chosen as my vocation has become my avocation. When nerves are tired and brain is weary, nothing affords such restful change as an hour among plants and flowers. This taste proves directly helpful too in brightening and adorning our school grounds. This same love enables me to dwell in the fairy palace of a happy future, for when too old-foggish to remain longer in the school-room I hope to join your ranks and renew my youth among the plants and flowers.

To-night we meet on the common boundary of our fields to talk together upon a topic in which we have a mutual and vital interest. I feel that I have neither wisdom nor words to speak worthily upon such a subject as character-building in the home and the school. However, at your kind invitation I formulate the tenets of my creed and give reasons for the faith that is in me.

To meet the ordeal of life manfully, I believe that every youth should go forth from home and school with the following equipment:

1st. A self-respect that shall demand a healthy body and a wholesome heart.

2d. An earnest purpose in life.
3d. Well-established habits of industry and thrift.
4th. Self-reliant courage.
5th. Unwavering love of truth and honor.
6th. Courteous regard for the rights of fellow man.
7th. A spirit of loving loyalty to a personal God.

It is our privilege and duty to search for the possibilities buttoned up under our boy's jacket, to study tendency of taste and temper, to plan how we may best help him to climb toward a worthy manhood. When face to face with life's realities our boy is forced to put away childish things, then shall come the crucial test of parental training and pedagogical discipline.

Out on the dry hill-side, with its thick, glossy, green leaves unscorched by the burning sun, unharmed by the terrible drought, there stands the sturdy burr-oak. The farmer's boy who has grubbed such trees can tell you of the straight, strong tap-root that sinks deep down into the cool, moist mother earth. If character is to have the strength and sturdiness of the oak, there must be a vigorous tap-root sunk early into life-giving knowledge.

One of the earliest lessons a boy should learn is the duty of properly caring for his own body. Let the simple, hygienic laws be so taught as to become a part of his creed. Lead him to discover that those who would make the strongest and most effective men, must take into life's race sound bodies. The average longevity of the most eminent philosophers, naturalists, artists, jurists, physicians and authors, is sixty-six years — more than double the average length of human life. This fact shows that the great minds controlling the world's forces have dwelt in sound bodies. England's leading statesman, the foremost man of the century, stands to-day at four score, strong and lusty. Bancroft, Von Moltke, Bismarck, Bryant, Tennyson, Whittier, Holmes, Longfellow — all reached an old age, frosty but kindly.

Let the boy early learn the effects of stimulants and narcotics. Let him see that nerve stimulants in time become nerve irritants, that the slave to tobacco or alcohol has lost the vitality and energy that win victory. When our boy reaches the opening dawn of manhood, let him not learn from idle talk and unseemly jest what he should be religiously taught. Let him know that science, religion and all human experience teach that the noblest manhood is pure. Let us set before our boys the same ideal of purity which the world so strenuously demands for our daughters. Make it with them a matter of both manly pride and moral duty to make the house they live in clean, strong and wholesome.

"Blest is the man whose heart and hands are pure;
His feet are steadfast, and his hopes are sure."

Next to personal purity I place the development of a definite purpose. How many young men are veritible Micawbers? In every community the youth may be divided into two classes — those having a definite purpose and those waiting for something to turn up. Nothing casts more reproach upon trainers in home and school than to see young men, instead of pushing on toward success under the stimulous of a clear, strong purpose, standing idly on the threshold of life, helplessly looking for assistance. The young man who passes from the high school and enters the grand institution upon yonder hill, simply because he is *sent* there, shows something lacking either in manhood or moral training. Equally faulty is the lad who becomes a farmer simply because fate made his father one.

The average country boy likes arithmetic because there is a consciousness of victory in conquering every hard problem, and still more because he sees that this study is a practical one. The same boy hates grammar because he sees no use in the study. Win his confidence, and he frankly tells you it is all right for his sisters to waste their time on this study, but a sensible boy has no use for the stuff. The wise teacher will mentally pat such a a boy on the back, and rejoice at such marked evidences of common sense. He will at once adduce facts to show this sensible fellow that a proper use of English would prevent half our law suits, that false syntax often shuts the door of success to the young man entering upon his career, that nothing so quickly and surely reveals a man's real education as does his manner of expression, that a business man of all men, should be able to express himself correctly and pointedly, lastly common sense, good taste, and honest pride demand that every one should acquire a mastery of his mother tongue. When this is done wisely the boy is surely won.

On the farm, in the home, at the school — too much of the work is done in an aimless, careless, cheerless manner. Parents and teachers are too often lifting dead weights — nay worse we sometimes encounter opposition from those whom we would lift to a higher plane. Let our children once see and partake of our aim, and the dead weight of cheerless inattention is changed to a helpful upward spring. "Make a boy feel the worth of a thing and the hard road becomes a pathway to the stars." Let us early awake in our boys the purpose of making the most and best of themselves, for underlying every successful life is such a foundation.

The third article of my creed is the belief in habits of industry and thrift. To the boy born upon the farm the opportunity to work comes as a birthright. Usually to his farmer father both preaches and practices the doctrine of thrift. Although lacking some advantages, the country lad gets from the doing of daily chores and the sharing of responsibility a discipline rarely gained by his city brothers. Difficult indeed is the task of teacher who attempts to inculcate habits of industry in those who have never earned a dollar or done a day's hard work. To one early trained in diligent habits enforced idleness is unbearable.

The boy taught to labor not only learns the true value of money but he experiences a new pleasure in wisely using it. The boy who earns an animal on the farm acquires a new interest in the whole herd. The lad who is trained to give his own pennies in support of lodge, Sabbath-shool or church not only feels more loyalty to them, but he is acquiring a sentiment that will develop a broad public spirit and a worthy patriotism.

Experience gives me a growing faith in putting young people more on their mettle and honor. We cannot do too much toward developing a spirit of self-reliance and courage. With one hundred fifty boys and girls in our high school, no teacher is ever left on guard to watch for culprits. Yet I never have an anxious thought concerning minor matters of order, well knowing that the right sentiment of the school would quickly curb any demonstration of incipient disorder or dishonesty. For eleven years in one school no teacher ever sat on guard, yet good order, ready obedience, and kindly courtesy were uniform.

There is nothing upon which an Anglo-Saxon boy is so sensitive as he is upon the point of honor. To be a sneak is to be despised by the boy public. To cheat even in a game of marbles is to lose caste. To take an unfair advantage in a fight is an unpardonable offense. Many a boy under the old regime of raw hide in the school-room gladly endured torture rather than turn traitor to one of his fellows, and so became among his mates the hero of the hour. He who would successfully train youth, must appeal directly to their high sense of honor. In some way we must early touch the hidden springs of self-hood and call into play the mysterious power of personalty. From external direction and outside restraint alone self-reliance and intelligent courage can never come. Thor, the god of the Anglo-Saxons, carried in his hand a hammer with which he beat down all obstacles. We must show the young Saxon of to-day that we know he carries a Thor's hammer and that we expect him to wield it until he stands at last a master of himself.

Of course, this training toward self-government does not mean that we must be blind to the faults of our children. They must be reproved with frankness and firmness. Obedience must be secured and the dignity of the law enforced — if necessary by physical pain. Indeed, a lively titillation of a boy's cuticle may, at certain times, prove the most direct and the kindest means of arousing his sense of justice and calling forth a wholesome respect for authority.

However, mischief must not be mistaken for meanness. Some good horticulturist has defined a weed as a vegetable out of place. It is equally true that most of a boy's mischief is simply misdirected energy. A lad, like a locomotive, must have an escape valve for his surplus energy. If he has taste for mechanics, give him a set of tools. If he likes gardening, give him a patch for himself. Let him have an occasional hour of harmless, rollicking sport, in which he may work off his surplus energy.

One of the most efficient aids toward inculcating a high regard for truth and honor is to place in the hands of our youth the best current literature. The Youth's Companion is a good type of the excellent periodicals now available. Farmers and gardeners well know that a most efficient method of keeping down noxious weeds is to properly cultivate useful plants. In giving our young people history there should be less of date and more of men. The lad may not understand the philosophy of history, but the pulse of his growing manhood will beat responsive to the heroism that inspired Horatius at the Bridge, Robert Bruce at Bannockburn, Joan of Arc at Orleans, Cromwell at Marston Moore, Wolfe at Quebec, Wellington at Waterloo, Washington at Valley Forge. Let our youth early learn that the world honors those who are true, that it writes in letters of living light the name Leonidas, while it regards with scorn that traitorous Greek who led the Persian hosts along the secret mountain path. That the name Arnold von Winkelried shines like a guiding star down the centuries, while the name of Benedict Arnold has become a synonym for treachery.

To cultivate a courteous regard for the rights of others should be an aim in all discipline. Some one has described personal liberty as the right to draw around self as many concentric circles as possible, providing they do not cut the circles drawn by one's fellows. Our public schools give excellent opportunity to teach the duty of respecting the circles of our fellows. Here every abuse of personal privilege is an infringement upon the rights held by all. The true principle of courtesy is pithily put by Polonius:

"This above all: to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man."

Daniel Webster once said, "The most important thought that ever occupied my mind was my personal responsibility to God." If my boy can have a firm faith in an all-wise, all powerful and all virtuous Being, his feet will rest upon a rock from which he may calmly view the stormy seas about him.

The most critical, the most trying, and yet the most glorious stage of a boy's life comes about his fourteenth year. At this, the dawn of manhood, new powers and new impulses spring up within him. He becomes restive under restraint. Childish things are put away, but our boy's attempts to think, to speak, and to act like a man are often anything but manly. Like Rip Van Winkle he suddenly wakes to a new and strange world. Not understanding himself and oftentimes misunderstood by others, he is apt to become in the home and school a sort of Ishmaelite.

At this the dawn of manhood, our boy needs kind, wise, sympathetic treatment. The dangers that threaten are internal as well as external. False delicacy should not keep us from teaching wisely, the lessons that will prove a safeguard to his manhood and purity.

Memory often recalls a boy healthy in body, manly of frame, cheery of face, generous at heart, who has blighted his own happiness and brought lasting sorrow into more than one home. Wise teaching would have saved him from dishonor and helped him toward that royal manhood which nature meant should be his. More than one boyhood acquaintance has entered that living tomb across the lake—never again to come forth to hope and happiness. These ship-wrecked lives needed a wise pilot to point out the dangers and guide them past the rocks of youthful passion.

At this stage we must win our boy's full confidence in order to become his wise counselor and sympathetic guide. Here we must inculcate a self-respect that shall keep him clean in thought, word and deed. We must teach him to select for his friends those that shall help him to become strong, pure and manly.

Treat the boy at this stage as you treat a spirited colt. Don't try to break his mettle or curb his manhood, but wisely guide his energy and direct his impulses. Companion with him and teach him how to be truly manly. Make him feel that he has a place to fill in the home, in the school, and in the community. Encourage such cordial relations of loving sympathy that in the years to come you may meet him with a smile and hold in your heart the glad consciousness that your contact with his young life has called out only the noblest and the best.

To night we have met on the common border of our fields, to have a chat about our common interests and to wish each other "God speed" in our mutual efforts to make the world brighter and better. Now we return to our gardens — you to yours, I to mine. Yours is the rare pleasure of watching the plantlet's daily growth, marking the unfolding of each bud and leaf, noting the stimulus of sunshine and shower, and seeing at last the product of your labor and skill ministering to the needs and joys of fellow men. I shall be more than satisfied if the fruit of my labor shall be clean, honest, true men and women.

MR. HYATT — Such a paper should be written in letters of gold, in pictures of silver.

A VOICE — The gentleman has expressed my opinion.

THE KITCHEN GARDEN.

BY MRS. J. MONTGOMERY SMITH, Mineral Point.

Mr. President, Ladies and Gentlemen: Your excellent secretary finding that I knew an onion from a hyacinth bulb, and was enthusiastic on the subject of horticulture in all its phases, has complimented me on my practical gardening, by asking me to read a paper before your august society. I much prefer being a listener, but as a variety of entertaiment is called into play, at your annual meeting, I will ask your patience with my crude ideas and relation of my subject. Just here I wish to say that I have profited much in the persual of the report of the Wisconsin State Horticultural Society for the year 1891, and have enrolled myself as a member.

A growing taste for horticultural pursuits and inquiries are yearly on the increase, and much good has been accomplished by the establishment of Horticultural societies in our midst, and in our country, nature favors us, as we have every variety of soil and climate. Our numerous Agricultural Fairs are an incentive to bring every growth to its highest perfection, not only to rival our neighbor, but to give our state the gratifying press notices of its productiveness.

The Kitchen Garden bears a very homely name, and appeals in its adjective, more directly to the satiety of our appetite than to our ideas of beauty and science. Yet, the science of chemistry, of botany and geology, all add value to the products of the garden, and even among our flower beds, beauty is no more expressed than in the feathery plumes of the asparagus, the beautiful verdure of the moss curled parsley and the different varieties of the scarlet fruited pepper.

He who has his own garden and orchard is comparatively independent, yet it takes much time to bring an orchard to fertility, but the garden is less refractory, and any fair measure of knowledge and industry will make a small plat of ground supply a considerable family with fresh, crisp vegetables the entire season, not forgetting the putting away of vegetables and herbs by the thrifty housewife for the supply of her table with summer luxuries, when our long cold winter makes us dependent upon the store room for delicacies.

In our western states I do not think the value of a kitchen garden as a means of real comfort to the farmer's family is fully appreciated, the oft' used objection "that it consumes too much time," is I think, a fallacy; the few hours devoted to it would not be mis-spent or lost, and after the winter's diet of solid food, it is not safe for one's health to dispense with fresh vegetables.

Gardening is essentially a domestic art, and the love of it is a charm we have inherited from our first father, who was placed in a garden "to dress it and to keep it," and he seems to have scattered the seeds broadcast over the whole earth, for everything we cultivate, either fruit, vegetable or flower, has been reclaimed from the native wild growth, by the skill and industry of the seedsman.

The cabbage in its native state is a slender, branching plant, without any appearance of a head — the potatoe, a rank, running vine, with very small tubers. Every climate has its own indigenous species, but the skill of the horticulturist and florist have so prepared the soil, and timed the planting, that both the species of the far north and south have become acclimated in our orchards, gardens and lawns — showing that vegetation is susceptible of many and important changes, by cultivation.

A kitchen garden proper, is a piece of ground set apart to the culture of esculent vegetables alone; but it is often customary to include small fruits, and those herbs which are necessary for the perfection of the cook's preparations — and many a kitchen garden has incorporated in its limits the flower bed, adding beauty to its internal arrangements by which I mean the division of the garden into borders, beds and walks, or, the laying out of it — although utility rather than ornament should be the main rule. It is not always in our power to select the site most advantageous, but when possible, a moderate elevation with a gentle inclination towards the south, is the exposure that will bring vegetation to its maturity earlier than a northern slope, as the shortness of our growing season needs every extraneous help.

The soil can always be adapted by attention and perseverence. Both location and soil being good, there will be little difficulty in obtaining a productive garden, if the best varieties of seeds are selected, the planting done at the proper time, and at the proper depth, young plants well worked and tended from their infancy to maturity, and all weeds exterminated without mercy for if allowed to get the ascendancy they will be hard to master later in the season. The hoe has often been called the gardener's best friend and cannot be used too frequently an old adage says,

"The more we hoe
The more we grow."

Where the garden is laid out in long rows, the modern wheel-hoe is a saving of labor, but the use of this does not dispense with the vigorous use of the original tool to stir the soil around the roots of the plant, keeping the ground sweet and open to the atmosphere preventing the parching effects of drouth. In our climate the hot bed is very essential to bring forward such plants as need a longer time for fruitage, than our season with its fluctuations of frost and chill will allow. Under this head come tomatoes, peppers, egg plant, cauliflower, brocoli, celery, okra, etc., which will be ready for transplanting to the garden, as soon as all danger of frost is over. If the air within the hot-bed is frequently renewed, the plants will become strong and healthy, the stems thick, and the leaves a bright green color so that transplanting will not retard their growth.

We all know that there is a vast difference in the productiveness and flavor of our garden products. And we should endeavor to procure, only the best and choicest seeds; I should recommend that they always be bought from a reliable seedsman — a well known and responsible person — for a large part of those annually exposed for sale are worthless, having lost their vitality. It is not always a fine sounding name, which makes a valuable variety, the plumpest and heaviest seeds produce the choicest vegetables. To our own seedsmen, Currie Brothers of Milwauke, I am much indebted for their reliable seeds, as well as their Horticultural guide, which is so explicit in its description of varieties, manner and time of planting, that a tyro may succeed. Every year the love of novelty, assisted by faith, leads us to cultivate some new discovery of the seedsman. Last year I received from Cairo, a variety of Egyptian seeds not those buried with the mummies in the pyramids, but the peas, beans and corn of the present day; the seeds and plants did well, the foliage looking more like our wild varieties, but the flavor of the natural vegetable did not compare in richness and luciousness to our own. Perhaps away from their native irrigation they could not be judged, although I kept them well fertilized and watered. Bostonians would not enjoy the baked beans from the Nile, and our soldiers would not want beans, beans, beans, as a steady diet.

In the spring, the first seeds to be planted are peas. I have made a planting of them as early as the 17th of March, but it is rarely that the garden can be worked as early. A diversity of opinion is expressed and followed as to the depth of the drills for this planting. Mr. A says we are planting them in too shallow drills, and Mr. B that the drills are too deep, but we keep on the even tenor of our way putting them in, about five inches, and never fail to have a large crop of this delicious vegetable. In my own garden I drill in every seed, with the exception of lettuce, which I sow broadcast, and thin around those plants which I wish to head. For garnishing, and the making of shrimp and lobster salid, I prefer the green fringed, as it is a thing of beauty and preserves its tender qualities nearly the whole season. As our seeds swell, every morning brings a great surprise for us, for we seem to stand nearer to our own creations. It has been said we must have patience with the phases of nature in bringing vegetation to its perfection, that she never hurries, if she delays the sun and rain, she cannot be forced, but in these days it is a great mistake, as the ingenuity of man hurries her with chemical fertilizers, mechanical contrivances, and even electricity is to be chained and harnessed, as one as our forces to expand and mature vegetation. Vulcan can forge his thunder-bolts, but man has trained the power.

Then after the maturity of our crops, the vegetables may be lucious to the eye, but the flavor may be destroyed by ignorance of the best method of preparing them for the table, which is their destruction. Many families do not derive half the satisfaction they might from their well tilled gardens, if the art of cooking and horticulture went hand in hand, and the result not only belongs to the sense of sight, but as well to the sense of taste.

A vegetable loses its beautiful color and flavor by long standing in tepid water, instead of being cooked as rapidly as possible, and served at once. A potato should never be plunged into water, but always steamed, that its flavor may not be left in the water, and a soggy object take the place of the dry, flaky vegetable. Many think the cooking of a potato very simple, but I think it is the very excellence of art to produce a well cooked potato — and this with the whole repertoire of vegetables. The kitchen is an adjunct of the garden, hence the consolidation of the nomenclature, *kitchen garden*. As a matter of hygiene, it is necessary to understand the best methods of preparing our food for the nourishment of our physical and mental vigor, as the horticulturists' varied knowledge of the preparation of the soil, for the health and well doing of the plants in our garden. The science of cooking is being studied throughout the civilized world, alongside the schools of agriculture and dairy making.

Already, down in the bowels of the earth, nature is mustering her forces — the juices of the earth begin to arouse — nature sniffs it afar off. We put our imaginations a few weeks ahead, and the air grows soft and sweet, while the reception of spring catalogues herald the gardener's longings and hopes. The first one of the new year, to me, was Mr. Toole's "Guide to Pansy Culture," but soon a flood of the beautifully pictured prints will make one long to possess everything they contain, both vegetables and flowers. Oh! the glory of flowers! What wealth is in them of God's promise to clothe them. O, ye of little faith! Our national display of horticulture and floriculture at the Columbian exposition of 1893, is already under way, and no other country on this planet can produce such varied and magnificent products of orchard, garden and forest, extending from Maine to California, from the state of Washington to Florida, and all that is rare in tropical vegetation has been collected and housed by men of wealth and taste, as well as seekers after novelties, and will be entered in the lists of our collections. Charles Dudley Warner's description of the indigenous growth of field and forest in the state of Washington reveals a marvellous wonder land. The subject of forestry will be an interesting study at the world's fair, and although Wisconsin cannot boast of such giants as the Red Wood of California. I can enumerate at least 30 varieties of native forest trees, many of them far from being pigmies. Let not Wisconsin be chary of her exhibits at the exposition, in every line, either of productions manufactured, native or historical.

I hope I have not wearied you beyond pardon, with the many branches I have incorporated into my paper.

PRESIDENT—This paper, according to our custom, is now open for discussion. I've no doubt that the garden just described is in great contrast with what many of you have at home.

MR. HYATT—It is a thing that is neglected fearfully. My wife makes me have a good garden.

PRESIDENT—Last spring we sent out over one thousand circulars asking correspondence regarding the amount of fruit and vegetables grown in the state, and it is an interesting report to read.

J. S. HARRIS—It has been my fortune, or misfortune, to travel around a good deal, and the only fruit I have found on the table among the farmers was cabbage and all the fruit many of them grew was cabbage and pumpkins.

GEO. J. KELLOGG—I think every farmer ought to have a garden of one acre and I commend the long rows and cultivating with a horse.

PRESIDENT—I think it is better to have one fourth of an acre well cultivated than to try to have an acre and not be able to take care of it.

IN THE GARDEN.

By **MRS. HELEN H. CHARLTON**, Brodhead, Wis.

The most subtle flattery that can be paid to the writer or speaker, at the present time, is to ask him to appear before some one of the many agricultural associations of the day. There may have been a time when the wily politician sought out the farmer and affected an interest in agriculture he did not feel, that he might win support for himself at the ballot box, afterwards forgetting entirely "the sons of the soil" by whose help he had attained the coveted position. But all that is now changed. The agricultural interests of the country, far outweighing even in a pecuniary value its commercial interests, are beginning to obtain the consideration they deserve. Farming is fast becoming a learned profession, and nowhere outside of a farmer's meeting can you hear a word in disparagement of the calling. He who can win the ear of the thoughtful, practical tillers of the soil must have something besides self-interest as his aim, and if, indeed, he have lofty aspirations for his country, he knows that here he speaks straight to the loyal heart of the Republic; or, if it be some high ideal of individual life, here is where the leaven of truth will soonest begin to work, and thus most speedily permeate the mass.

Pardon, then, the presumption of a woman who, conscious that she can present no new thought nor even hope to reveal old truth in some new form, yet cannot deny herself the proffered honor. Perchance, after hours of earnest consideration of the best methods of fruit culture, that you may the more comfortably, each sit beneath "your own vine and fig tree," after careful attention to other really profitable papers the tension of brain and nerve may be relieved, by a ramble with her "In the Garden." And pardon her, also, if the style be something after the manner of a walk, with the man with the wheelbarrow. You know that style — draw back a little and apply more force when an obstacle is encountered, and thus by a succession of stops reach the destined point.

Ruskin says the statement, made in Genesis, that the "Lord God took the man and put him in the garden to dress and to keep it," is as true now as then, only now the garden is the world. This being so, every man, no matter what other vocation he may follow, is called to be a gardener and properly fulfilling this divinely appointed duty, he finds that he himself dwells within the confines of Eden, and home becomes truly what we love to call it, a "type of Heaven."

Just how great an influence the garden has had in the world's history it would be hard to tell, and hard to tell what it has not influenced. The scene of the first yielding of human weakness to temptation is laid in a garden, so, too, the final victory over sin and the grave, when the agonized Christ prayed, "Thy will be done." If from the garden of delight came sin and a multitude of woes, from the garden of sorrows came infinite joy.

"In the garden!" What picture does the phrase bring to your mind? Do you think only of the tiresome hoeing, the endless weeding? Do you see only a few straggling flowers, a few sickly vegetables, untidy walks and ill-kept beds? No. Is it not true that the phrase brings to mind a garden in its perfection, without thought of the labor and care necessary thereto? thereby proving that in this direction the result so far exceeds the labor put forth, that in the glory of the achievement all thought of the effort is lost

What novel have you ever read that could do without the garden? Was it not the flutter of her white dress in the garden walk or the gleam of her robe in the summer house which led the hero to her side, and brought about that declaration and confession which made the spot, at once, an Eden? Or if a society story, does not the hero lead her from the "heated ball room," to the moonlit porch into the shadow of some overhanging vine or grand old tree, or to the conservatory where mid the cool seclusion of tropical foliage and the perfume of flowers two hearts glide into one? And if the novelist cannot do without it, much less the poet whose flowers of poesy are inspired by nature's loveliest blooms, from the rose and lily to the cowslip and the goldenrod.

How much of beauty has the garden given to literature and art, what wonderful discoveries to science and philosophy. Was it not the falling apple which taught to Newton the wonderful law which guides the spheres in their appointed orbits, and who knows how many laws of a higher philosophy, pertaining to those other heavenly bodies, the souls of men, have been elucidated in hours of quiet meditation in the garden.

From the beginning until now the garden has been a synonym for ease, for delight, for luxury. Times were when only the wealthy could command this luxury, but in this age and in this land, it is within the reach of every man who cares for it. As you pass along the city street, block after block of elegant homes, although you may admire the architecture, there is nothing of interest sufficient to stay your steps until you come to one more fortunate than the rest, in that it has clung to part at least of its original inheritance, and so has room about it for a garden. Then you pause; the plants may be those you are familiar with in more rustic places, glowing geraniums, dusty miller, coleus and pansies, but what a glory they give the place. The loiterer by the way feels a little touch of envy and sighs for a home like this; this means wealth, influence, position in society, and he resolves to work a little harder, to save still more, that he may accumulate money enough to purchase and maintain such a home. All the while, perhaps, he is the owner already of broad acres, has a vast deal more space around his own house, and could have a finer garden at less expense than the man he envies; this man who toils in the close air of a counting-room, and longs to exchange his city home for some good, broad, generous country farm. Thus weak human nature ever looks away to the distant, and sighs for what it deems unattainable, when it might hold it in possession, might find it, if it would but look down at its feet and *stoop* to pick up that which it covets. One handsome plant growing in the window of a house will give to it a more distinguished air than all its architectural ornament, and the vine which clambers about a porch will eclipse the pillars thereof, be they never so handsomely carven.

I have been greatly interested and profited, too, by the discussions I have heard in regard to fruit raising, the best way to set out an apple tree, to shade it, to mulch it, to care for it until the lucious fruit crowns one's efforts, for each such discussion has been a practical lesson on family life and training. I have been disappointed when I heard men say "there is no profit in raising fruit in Wisconsin; there is no profit in having a garden; better by far cultivate a few more acres of corn or tobacco and buy all your small fruit." Said one gentleman, "I have experimented for years and know that in my section apples cannot be grown with a profit. I have enjoyed experimenting, and I have had some fine apples for my own use and to treat my friends, but there is no profit in it." Did he not contradict himself? I longed to ask him what sum of money, what number of good, hard silver dollars, counted into his palm, would be to him an equivalent for the exquisite pride and pleasure he had felt, as he walked with some friend, in the shade of his apple trees, told of the difficulties which had been overcome and shared with him the rare and costly fruit. Money is capital, so is labor. Money in the city buys apples and often complains that it pays a high price for them; labor in the country buys apples and feels that it pays dear for them, but no amount of money in the city can buy apples with the beauty and the flavor of those which labor buys with the raising.

That market gardens near large cities are profitable in a money line we know, but we have not data enough to prove that the private farm or city garden even pays a pecuniary profit. We know the owners usually remark "the garden costs more than it comes to." But if "the life be more than meat and the body than raiment," then we know both from observation and experience, that the garden pays a large profit in other than material good. We speak of this country often as a "nation of homes," and the phrase does not evolve a picture of row on row of brown stone fronts, but of thrifty homes scattered over our prairies, dotting over hillsides and nestling in our valleys. These are the typical homes of the land, and common loyalty demands that every citizen make his home as attractive and beautiful as may be. Rather than build a more pretentious house, loyalty demands that he glorify the present dwelling with a garden. The handsomest house, standing amid bleak and unpleasant surroundings is shorn of all its glory, but the garden borrows no effulgence from the house; it always lends an added grace and beauty. From these loyal homes went a stalwart army, when treason threatened the land; an army inspired by love of home, and love of home is one of the profitable things which springs from a garden. No matter how much money he may afterward acquire, nothing he can buy with it will ever atone to the boy who goes forth from a bare and cheerless home, for the lack of childhood's joys; and no hardship can ever efface from the mind the memory of a happy childhood. Were it not better then for us to give to our children that inheritance which cannot be taken away from them rather than to strive to lay up for them a large reserve in the bank.

Every man who possibly can should have a garden that his children may learn to enjoy life, may learn to enjoy the pleasure, not of earning or of giving money, but of sharing joys beyond price, that partaking of nature's bounties, they may themselves, in spirit, grow generous and bountiful. Enjoying life is almost a lost art in this country, and to practice it well one must learn it early. The pleasure of hunting lies not so much in the value of the game as in the fascination of the chase. If we must earn the almighty dollar why should we not contrive to enjoy the never ceasing chase after it?

The artist and the poet are out for a morning walk. From the summit of some hill, they would see the glories of the sunrise, or in the stillness of the forest they would hide as unseen guests at the morning concert of the birds. The one will paint the scene in colors which will give to him name and fame because they speak to weary eyes of things they long to behold; the other will paint the scene in words which will make him beloved of all mankind, because through them he speaks from nature's heart to their's. On the same morning the man with the milk pails on his arm will plod his weary way to barn or pasture, cross because he is up so early, cross because his lot is so hard, cross because there are so many cows to milk and the price of butter is so low, and yet the rosy glow of the dawn, the sparkle of the dew, the burst of choral beauty, are all there for him, as well as for the others, if he will but open his eyes and unstop his ears. Nay more for him, for they are his day by day; morning after morning he may greet the sunrise, at eve behold the glories of the setting sun, while poet and artist are toiling away in close rooms striving to elaborate for others their single glimpse of nature's marvels.

You would do anything for your children, you wish to give them a good education, you wish to develop them into the broadest breast of manhood and womanhood, let them get their earliest training from a garden, and not from books. Let them bury in its soil, before they are formed, the habits of idleness and carelessness. Let them cultivate their patience, perseverance and watchfulness, and they will take to their books quickened perceptive faculties, which will be worth more to them than genius.

Monotony is the bane of existence, a garden is a constant surprise party. Here were planted seeds that you are sure will never germinate, you have waited so long, you have given them up, lo, some morning a perfect forest of little green stems greet your eye. Here is a rose that will not blossom this season, it was never so late before, you sigh as you pass it by, and all at once, some day, a half open beauty laughs in your face and points out to you scores of buds, unseen before. Here is a little plant, so compact and perfect in form, so glossy its leaves, so full of buds, another day, and it will be scarlet, a living flame; in the morning it is not, the cut-worm hath taken it. Where can you learn better the lesson of "Nil desperandum?" Where can you learn better the need of steady growth, where learn better the need of constant watchfulness against hidden foes? Where learn better the necessity of choosing from all the elements about you only that which is best adapted to your own growth than in the garden?

Once when visiting a friend it the city, I complimented her on the beauty of her home, "Don't say a word about it," she said, "I shall never have a real home until I can have side lights." I realized then what had never before occurred to me, that life in a block was little better than perpetual imprisonment to her, and the outlook on every side in my simple village home even through small and old-fashioned windows took on a new and priceless value.

There will of necessity always be some homes without side lights, some homes with no garden ground, some little ones who will not have the freedom of God's pure sunlight and air, but the ideal home must ever be in a garden, not an elaborate garden with fountains and statuary, and the entrance locked, but a garden where the children may flock after school, where there are flowers little ones may pick, berries bright eyes may espy and little fingers gather, fruit which the babies and the birds may vie with each other in obtaining. A garden where, from the lettuce and radishes of the early spring, shall follow a succession of choice vegetables, which shall make the every day meal a banquet fit for a king, and conduce largely to the health and happiness of the family. But some one says, "We can buy garden sauce and berries cheaper at the grocery." True, second hand things always come cheaper, get them that way if you must, but if you can, take them fresh from Nature's hand. Says another, "A garden cannot thrive where children have free access to it." Try it and see. They will soon learn to think of it as you think of it, and prize it or despise it. They will not wilfully despoil it. They will cherish what you cherish and be the heralds to you of every hint of progress. Quick observation, keen discrimination, thoughtfulness, tenderness, an inspiring idea of perfection, are all graces which come from a loving acquaintance with a garden. And if, later on, in the journey of life, the child be called to walk in desert places, even as his weary eyes look forward to the world beyond, the paradise of God, so will his thoughts turn backward to the garden, the paradise of his childhood and it shall be as a well of water to his thirsty soul.

As we read the reports of the various state societies and the bulletins of the farm institutes, as we note what our university is now doing for agriculture, as we look with an admiring eye at the thriving farms and flourishing gardens, and as we meet in convention the men who have wrested from the hand of difficulty so much of success, we are constrained to believe that the gardeners of this state have been actuated by some other motive than the mere desire of pecuniary reward, and we trust they will share, in small degree at least, the true patriot's reward as at the coming Columbian Exposition they will make known to an admiring world what has been done in Wisconsin, in the garden.

MR. HYATT — One of our Professors is a good deal interested in agriculture but he says, " when you get out in the back yard and pitch manure all day it takes the poetry all out of agriculture."

E. H. S. DARTT — I feel sorry for the poor farmer who cannot afford to have a garden. I think there are farmers who have been obliged to neglect the garden to care for their field crops. When I lived in Green Lake county I knew a man by the name of Bow, his garden was always weedy, so much so that if any one's weedy garden we used to say " as weedy as Bow's garden." Now the question is was'nt that man who spent his time making money and helping his neighbors doing as much good as the man who spent his time in the garden and had it destroyed by drouth?

A. J. PHILLIPS — I will tell you how they garden in Minnesota. I was there and I stayed with Dartt; he went down town and bought some berries for supper. I was down town in the morning and they told me they sent over to Sparta, Wisconsin and bought their strawberries of Mr. Thayer and sold them to Mr. Dartt.

Moved that Prof. J. W. Livingstone, Mrs. J. Montgomery Smith and Mrs. Charlton be elected honorary members for the ensuing year. Motion prevailed.

PROF. J. W. LIVINGSTONE — I thank you for extending to me the courtesy of being an honorary member of your Society. I hope some time to become an active member when I have become a vetern in the school-room.

VILLAGE IMPROVEMENT, SOCIETIES AND ARBOR DAY.

By **PROF. E. S. GOFF.**

The attractions of our own capital city, that have caused it to become more or less known throughout the length and breadth of our land, are not in its architecture, nor its municipal improvements, but rather in the beauty of its natural surroundings — its charming lakes, and broad expanses of varied landscape. It does not require a cultured mind to appreciate attractions of this sort, and all who visit our city, from the most highly educated summer tourist to the most ignorant and sated commercial traveler, unite in a gratuitous advertisement of the beauties of our Madison.

The visitor to our larger national capital usually finds quite as much delight in rambling through the extensive public grounds, so admirably planted with the large collection of trees and shrubs made possible by that comparatively mild climate, as in the splendor of its architecture, the glitter of its fashion, or the extent and richness of its museums and libraries. In like manner, the visitor to our great eastern metropolis usually brings back more pleasing impressions from the spacious landscapes and gracefully meandering drives of Central Park than from the interminable din and tumult of that densely crowded city, despite its many features of profound interest.

These facts exemplify a trait of our human nature, viz., the average mind finds more rest and comfort in contemplating the beauties of nature than those of art. We have but to add to this that the peaceful companionship of trees, rocks and rivulets, leads us away from the dust and din and polluted atmosphere of large commercial centers, and we have abundant and sufficient argument for the establishment of parks in all our large towns and cities.

Unquestionably the wisest time to establish the park is while the city is in embryo, i. e., in the village. The land may then usually be readily secured. Often a public spirited citizen is willing to donate it, and a convenient plat may frequently be found that is already more than half beautified by Nature's own planting. The generation that grows up with the park thus early founded, will learn to more fully appreciate and profit by its attractions when the village has become a town or city, than if it is postponed to a later time, while the beauties of the park itself will directly tend to promote the growth of the village by inviting the most desirable class of inhabitants. Furthermore, the growth of the village will naturally tend to gather about the park, and thus the latter will be more centrally located in the resulting town or city than will be probable if its establishment is postponed until a considerable center of population has gathered. It should be remembered that a beautiful park cannot be made by man on short notice, but that nature must do the greater part of the work in her own time. It is clear then, that the earlier she is permitted to commence the work, the sooner will the desired end be attained.

There are reasons why my argument for park building is especially applicable to the villages of our own state. The development of our natural resources is as yet in its infancy. Our land has been but half reduced to culture. Our railroads are but half builded, and the manufactories that will one day transform the metals of our mines and the timber of our forests into a multitude of articles useful to man are, as yet, scarcely thought of. There is every reason to hope that a considerable number of our present villages may within the next two or three generations, become thriving towns, while a few must reach the dignity of cities. In all such villages, the establishment of the park at the present time is but sagacious business policy, a means of investing a little money now, where it will save the expenditure of a vastly larger sum at a future time, and at the same time of promoting the growth of the village. But suppose the village is not destined to become a city, is the park then uncalled for? Not at all. The refining and educational influences of the park will be exerted as truly and as profitably upon the smaller community as upon the larger. Because circumstances have not yet rendered a breathing place positively necessary to the health of the inhabitants, is not a good reason for depriving those inhabitants of the pleasure and profit that may accrue from such a place. As time passes, the farms in the neighborhood of our villages will become more thoroughly cleared, and the pleasant rambling places will become fewer, while the gradual rise in value of farm lands will render proprietors more exclusive, and tend to more closely confine the village residents to their own narrow limits. In short, the park if wisely located and developed, will always prove, in the long run, a good investment for any village, whether regarded from the financial, the intellectual, the moral or the sanitary standpoint.

Probably few village residents will dispute the desirability of a park, but many who will most readily acquiesce in such a scheme if inaugurated by some one else, will be least willing to make a definite move toward it themselves. A leven of enthusiasm is needed to carry on progressive plans of this kind that the average citizen does not possess. I will cite here as an instructive example of what may be accomplished by a few earnest workers, a case that recently occurred in a rather ancient Long Island village, as published in a recent number of *Garden and Forest:*

"HOW A VILLAGE GAINED A PARK.

"Like many of the very old towns lying near the great cities which cluster about the harbor of New York, the village of Jamaica, on Long Island, has a reputation for staunch conservatism. During the present year, however, it has been the theatre of a progressive movement which is worthy of being placed on record for an example of public and prompt activity. Last winter a lady who lives in the village organized a society known as the Linnæn Club, which had for its objects 'the diffusion of botanical knowledge, the encouragement of floriculture, and the preservation of our native plants, shrubs and trees,' and to promote these worthy objects the founder of the club gave 'little talks,' as she modestly called them, every other week, alternating with another member, who, like the founder, was a member of the Torrey Botanical Club of this city. These meetings proved attractive, and what is better, they proved instructive and stimulating, and soon the club numbered some forty members. The idea of cultivating wild flowers and American plants suggested the advantage of a public place to grow them in, and this thought soon germinated into a conception of the necessity of something like a botanical garden or park for the Linnæn Club and for Jamaica. The club could own no real estate, but advantage was taken of the law in this state, which was passed in May, 1888, to meet such emergencies, and to which we have often alluded before. This act enables any fifteen or more citizens, under certain restrictions, to secure land for parks and play grounds independent of municipal authorities. These corporators can acquire property, by gift or otherwise, to the amount of half a million dollars, and such additional amounts as may be authorized by the mayor and common council of any city or the supervisor of any town in which it is proposed to establish such park, and they are clothed with the power to employ officers for enforcing order and compliance with their rules. Fifteen members of the Linnæn Club, therefore, incorporated themselves under this act as the Highland Park Association. so that they could take possession of the land which they had determined to secure, and two weeks ago a deed for this land was formally delivered to the corporators as a part of the festival exercises at the first flower-show of the Linnæu Club—and the first flower show ever held in Jamaica.

"Jamaica lies just south of the range of hills which forms the back-bone of Long Island and gives character to its scenery. Twenty years ago these highlands were well clothed with trees, but the forest growth has gradually been swept away and the slopes have been turned into streets and building lots. On the summit of the range, just opposite the central part of Jamaica, lies a pond, which has been called from time immemorial the Goose Pond because its shape had a fancied resemblance to the outline of that bird, where the village boys used to skate in winter, and swim and gather pond lilies in the summer. This pond, with half a dozen acres of land at one side of it, was the park area coveted by the new association who wished to preserve from being covered and blotted, out the most interesting feature of natural scenery near the village, and to save for the boys and girls of the future, grounds where boys and girls who are now men and women had been free to gather nuts and wild flowers. Fortunately, the owner of the land was generous, and being a native of the village, he held his birthplace in affectionate remembrance, although he now lives in a distant state. He therefore not only placed a low valuation upon the land, but subscribed half the sum needed to purchase it. The club went energetically to work to raise the other half, and gave all their neighbors the opportunity to help according to their means, the individual subscriptions ranging from two and a half to a hundred dollars; and now Highland Park is public property, held in trust as a pleasure ground forever by the fifteen corporators and their successors."

I am not informed as to the laws of our own state in regard to the purchase and control of real estate by societies. Possibly some legislation may be needed in this respect, but if so, it should not be difficult to secure. It is of course unnecessary that all parks should be inaugurated in the same manner as was the one in Jamaica. I cite this as an example of one way in which the scheme was successfully started.

The site that possesses most natural advantages for a park is often one that is least valuable for other purposes. A field so rough and rocky as to be unfit for tillage. and so unsubdued that only sheep and bees can gather anything of value from it, is often the very best location for a park. The more crystal springs and murmuring rivulets, the larger its bowlders and the more picturesque its trees, the better is it adapted to the purpose, provided it also has a reasonable amount of comparatively level surface for the more beautiful style of planting; for while we desire something beside the picturesque, it is this that is usually hardest to secure. The area need not be large. Five or ten acres is perhaps as much as the average village of 800 to 1,000 inhabitants had better undertake, but if double this area is readily available, it may often be wise to secure it, for it is to be understood that the ground need be improved no faster than circumstances permit.

In regard to the improvements to be undertaken. It is always advisable to take the counsel of a landscape gardener, and have him submit a plan. Then place this in the hands of a committee for execution. An ameteur may be found who possesses the requisite taste and knowledge, but by all means let the work be entrusted to the proper intelligence, and then let the plan be adhered to, to the letter, whether it suits everybody or not. If the means at hand are small, do not hasten to realize the whole plan, but commence with that part of it that requires the greater length of time for its development. By all means let the part of the work that is undertaken be well done. Let the trees and shrubs that are put out receive not only careful planting, but good after care, and let the part in which improvement is undertaken, however small it may be, be so kept that it shall invite visitors, and that it shall have something of interest and instruction for all who come. This does not necessarily mean that elaborate improvements need be commenced. If in addition to fencing the plat, the undesirable wild growth be cleared away from a part of it, the dead branches removed from the trees and shrubs that it seems desirable to leave, with a distinct label placed on each, and a few simple paths laid out, an excellent beginning will have been made, and with the planting of a few other trees in appropriatiate places, will be sufficient improvement for the first year. The main planting of trees and shrubs should by all means be of native species, of which the hardiness is established, and which cost but little. Another season, the improvements may be extended to include a few rustic seats, with perhaps a rustic bridge or two, provided there is a stream that needs bridging, and perhaps the laying out of a few drives. Some system of surface drainage may need attention, though like all the rest of the plan it should be gradually developed. Managed in this way, the expenses of the park will not be burdensome, while its gradual growth from a native wild, or a simple cleared field into a place of rare beauty will make it of greater interest to the community than if it were entirely completed at the outset. All expensive structures such as fountains, arched bridges, fish-ponds, etc., and the extensive culture of flowers should be postponed to a later period.

The experiences of villages that have inaugurated improvement societies in older sections of our country should have some value as guides for others who contemplate similar undertakings. I have sought to acquaint myself with some of these experiences, and for our own guidance, will mention some of the dangers that need to be guarded against.

A common cause of disappointment and failure is found in the fact that, in many people, enthusiasm in progressive work of this kind is rather readily inspired, but decidedly short-lived. The society is organized, and a plat of ground is secured. Then follows a craze of tree planting, in which many willingly indulge. The result is, too extensive planting of trees that are often poorly selected, and illy adapted to the purpose; and these are frequently planted with little regard to what the effect will be when they are grown. They are too closely crowded, or are so disposed as to destroy the finest effects. But the worst is yet to come. Many who have been most efficacious in the ill-planned work of tree planting, feel that as a reward for their noble labors, they should be henceforth excused from all responsibility. The result is easy to foresee. The trees languish for want of care. Many of them often show so little respect for the philanthropic hands that planted them as to actually die. Those conservatives that so vigorously prophesied failure at the outset will begin to point their fingers and say, "I told you so." In the worst cases, the result is failure of the enterprise, and a discouraged public sentiment that it is difficult to interest again in other projects of the kind. And yet this failure does not show that the plan of starting a park was not a laudable or practicable one, but only that it was improperly conducted. Had more common sense been applied, the result might have been very different.

It should be set down as an axiom at the outset, that the park will require some attention, so long as it is maintained, and that those gushing philanthropists whose enthusiasm is ephemeral, while they may often be turned to useful account, should not be depended upon to bear the burden through the heat of the day. In soliciting members for the society, all should be informed that a small amount of co-operation is desired each year, rather than a great amount at the outset. A small membership fee should be agreed upon as a means of providing the society with needed funds, as well as of testing the sincerity of would-be members. The amount of money necessary to keep such grounds in order, after they are once established, is not large. A score or more of earnest-minded citizens, by making a small contribution each year will be able to maintain them in creditable condition.

The work of the village improvement society need not, and should not be limited to the park, but the village streets, and the village cemetery should receive a part of its attention. In case the time is not ripe for the realization of the park, the society may wisely and profitably devote all its energies in these channels. Much may be done through influence in the way of awakening an interest in the improvement of streets, which will result in the planting of shade trees on streets where none now exist and in the better care of trees already planted. Uniformity of species, straightened rows and the filling in of vacancies of street trees, as well as the better care of lawns, and the more extended culture of flowers are some of the objects to be sought. Through combination, trees and shrubs may be purchased in quantity at much reduced rates. By means of the interest that may readily be aroused in the work of improvement, the appearance of the streets and homes will soon take on a new and more pleasing aspect.

One more suggestion, and I am done. The establishment of Arbor Day in so many of our states is a most encouraging indication of progress in public sentiment in regard to tree planting and rural improvement. Let us see to it that in our own state, at least, this opportunity for impressing the minds of our youth with the value of trees as objects of beauty and utility be not frittered away. I quote from an editorial recently published in *Garden and Forest:* "If our cities and villages are ever properly adorned with well selected trees, well planted and well protected, this will be brought about through an appreciation of trees born of seed planted in country school-houses." "If there is ever, in the United States, a stable, successful and popular system of forest control and forest management, applicable alike to the forests of the state, and to the humble wood-lot of the smallest farmer, it will rest upon a basis of knowledge of trees and their importance to the community commenced in the common schools."

By all means, let the village park be regarded from the beginning as an adjunct to the village school. Let it be located, when possible, sufficiently near to the school-house so that the boys and girls may visit it frequently. Let the trees and shrubs be distinctly labeled with both the common and botanical names. And let the planting be done, so far as possible, on Arbor Day, and with appropriate ceremonies in which the young people play a conspicuous part. If this method is strictly observed, there will not be much trouble experienced in raising the money needed to maintain the park, and this trouble will become less and less as time passes.

I submit these thoughts to the members of the Wisconsin State Horticultural Society, and others who may have chanced to hear them with the hope that they may be regarded as more than the dream of visionary, that their importance may be duly weighed and that they may yet bear fruit in some of the beautiful villages of our growing state.

DISCUSSION.

SECRETARY—You who have read the report which was made to the state superintendent of schools also know that one thousand dollars was set apart to be used for prizes to the schools making the greatest improvement in school house and grounds last year. This served as a stimulus to many and resulted in much good. We hope the good work so auspiciously begun will be carried forward still further this year.

CHAS. A. CHANTER—I think the subject brought before us by Prof. Goff is a very important one. Our Prof. Smith, of Kilbourn City, will have his pupils observe Arbor Day this spring. We have bought Taylor's Glen and shall make a park there, where we will have the finest show of water lillies ever seen in the state. It will be under the direction of the Agassiz Society.

Adjourned.

SENATE CHAMBER, Friday, A. M.

MEETING OF EXECUTIVE COMMITTEE.

The question of the summer meeting, and where it should be held, came up for consideration, and was decided to leave the matter for the secretary to correspond with the different societies that had expressed a wish for the state society to hold its meeting with them, asking for propositions from them and to decide where it should be held.

It was moved and carried that the matter of soliciting advertisements to be printed on programs for the summer meeting be left with the secretary and treasurer.

Moved and carried that the annual meeting be held in Madison the first week in February and that a cordial invitation be extended to the Cranberry Grower's Association to hold a joint session with us.

It was decided to defer collecting samples of fruit for wax models until next fall. The secretary was instructed to send a few specimens of fruit to get samples of wax casts before deciding to whom to give the order for making the collection of models.

It was recommended that the cards of the fruit growers of the state be solicited.

Adjourned *sine die.*

REGULAR SESSION.

Geo. J. Kellogg moved the addition of the Older raspberry to the list "for trial," and also the Green Mountain grape.

Carried.

GEO. J. KELLLGG — Are we prepared to add another Trial Station to our state? I wish to bring before the convention the offer of Mr. Chanter for a Trial Station; if you do not wish to take action on it now it is a proper matter to bring it before the station committee. Mr. Chanter asks no funds only surplus plants from other stations.

A. L. HATCH — I move the matter be referred to Prof. Goff, as he knows how many plants are available.

SECRETARY — Mr. Chanter's idea is, for one branch of the work, to preserve all the wild flowers of the state; but as a state Trial Station, the same as the station at Sparta, etc., my opinion is that we should have a Trial Station in a different part of the state and not have them so near together.

CHAS. A. CHANTER — The location is such a magnificent one that in my opinion you could not get a better one.

A resolution was introduced and adopted that we consider favorably the appointment of a Trial Station at Kilbourn City in charge of Chas. A. Chanter, and refer it to the consideration of the committee on Trial Stations.

HORTICULTURAL EDUCATION.

BY A. H. FELCH, Amherst, Wis.

In this country no apology is needed for introducing the subject of education at any meeting of her citizens. On intelligence depends the very life of our government. And upon intelligence depends the success of a man or set of men in any enterprise or undertaking. Our state and government have been liberal in making provisions for educating the people. Still as Gov. Hoard said in a recent lecture: "The farmer does not receive his share of educational advantages."

This has been felt by the more intelligent for some time. Their isolated situation deprives them of the benefits of societies, lectures and other incidental helps. If the children outgrow the district school and are sent away every influence tends to draw them away from the farm. If they graduate they almost invariably move to the city where they can the better enjoy still farther advantages. Our normal schools were supposed to be established for all. But the country receives but little benefit from them. Most of the pupils of the normal seek bigger pay than they can get in the country. In fact the country schools in many localities are growing backward, not as good as they were twenty years ago.

What is the remedy? It is mainly in the farmers themselves. Enthusiasm in a calling begets enthusiasm. Respect produces respect. A general awakening is needed and a confidence and decision of purpose to end only in death. Associations for improvement must be formed and places provided in which to meet. And then the meetings must be attended with as much zeal as a religious or political meeting. When farmers become acquainted and have confidence with each other they can get what they ask.

The establishing of the agricultural schools and experiment stations in the different states has been one step in advance. It has awakened an interest in agricultural education, and this should be increased by every means in our power. The hands of the professors should be held up till the battle is over and the producer stands where he ought. The rights of the agricultural student should be guarded with jealous care. The farmers should demand their full representation from the board of regents. Other agricultural and horticultural schools should be established in different parts of the state. There should be at least one in every congressional district. The principles of agriculture and horticulture should be taught in our normal schools. Why would it not be as well for our works in chemistry, geology and other sciences to deal with practical ideas? Why should there not be an agricultural course in all our colleges as well as a scientific. And when public opinion is advanced and teachers become capable, why should not object lessons be given daily on familiar objects?

Thus children would become interested in everything around them and acquire habits of close observation. I once knew a teacher to form a cabinet of woods, by having the children bring specimens with bark attached. These children took great interest in it. A case of insects could be formed in the summer and the children could easily learn which were beneficial and which injurious. Plants could be gathered and their natures explained. Their growth and cultivation would also interest if properly presented.

It is what is learned outside of books that develops character, inclinations and tastes.

The farmers' institutes are doing great good but they seldom reach the young.

If it is not possble to organize other horticultural and agricultural schools, appropriations should be made to hold winter schools in different parts of the state. Laudable efforts have been made to induce a good attendance at these annual meetings. Yet but few new ones are reached each year. Do not think that I mean to depreciate the efforts that are being made. But let every one feel that more is needed.

The lever is working. Public opinion is advancing. Sometimes the main ideas are lost sight of and then they rise again on the crest still farther on.

We may not live to see it, but I believe not many years will elapse before every respectable institution of learning will have its agricultural course. It will not then be a crime to be an agricultural student, but lawyers will take pride in drawing their illustrations from the fields of nature, dealers will seek to know what they can of the plants they use, and divines will seek to lead their flocks by examples from nature up to nature's God.

DISCUSSION.

SECRETARY — I am sorry I did not hear the whole of this paper, but the concluding portion gives me an idea of its excellence. It is no utopian idea to look forward to the time when branches of agriculture and horticulture will be taught in our schools, and I think Wisconsin may congratulate herself to-day in the advancement made in this direction. There is a growing tendency towards this line of education in the common schools throughout the state.

RESOLUTION BY THE SECRETARY.

Resolved, That we hereby convey our thanks to E. V. Briesen, Superintendent of Public Property and his assistant, for making considerate arrangements for our convenience, in furnishing the senate chamber, and for courtesies during this annual meeting.

Resolution adopted by a rising vote.

A. L. **HATCH** — There is perhaps a little disposition to feel as though something was very wrong when horticultural or agricultural subjects are mentioned. It has heen my fortune, or misfortune, to be connected with an effort to popularize these subjects in this state. The reason why it has not been more effectual is because the people themselves have not been more in sympathy. It is a fact that the most progressive man in this respect, who stood loyally by the farmers in this state in regard to progressive agriculture was a lawyer. If a professor or our teachers have been at fault in this matter it is only because the fault is in the people themselves. A few years ago Prof. Henry told me that he went to Chicago and got samples of all the different kinds of wool that were in the market to conduct a certain line of experiments with. I said to Prof. Henry, you need to get samples of defective wool so farmers can teach their boys how to properly care for their sheep. He said, "I will do it and I wouldn't take ten dollars for the suggestion." Now he would have been just as ready to conduct experiments on horticultural subjects if any one had proposed them. Prof. Henry says the reason why boys do not come to the agricultural college is because they think it does not pay. A short time ago I was in the lecture room, where Prof. Goff was giving a lecture on horticulture. How plants get their nourishment through the leaves; he taught a principle that those who heard it will apply. I do not believe the statement that is sometimes made that our schools are going backward, that they are not so good as they were ten or twelve years ago. I was in a high school a few days ago and as I listened to a class in reading I could not help comparing it with the instructions that were given in reading twenty years ago.

J. H. **FELCH** — I did not say schools were going backward as a rule, I said in some instances they were. When the dollar is held up before us for everything then we won't mind the home comforts.

J. M. **SMITH** — Although education is in advance of what it used to be when I was a boy, yet I sometimes think we often fall far short of what we ought to attain in our schools. I met a man not long ago who was very mad because book-keeping was not more generally taught in schools. He said his daughter had just been graduated; he lost his property and her mother went into the kitchen and did the work while the daughter was in school. Soon after she was graduated she received an invitation to go to a position as book-keeper, and soon after she came home because she knew absolutely nothing of book-keeping. Now this shows as the man said, impracticability in the course of instruction at the present time.

Prof. **GOFF** — I have come to the conclusion that there is one fundamental wrong in our school system, it may be all right for the city but it is an abstract system when it comes to be applied to boys that are to be farmers. I have no fault to find with certain things, they are all right in their place, but while we were reading Bacon's Essays we might just as well have been reading essays on horticulture, and when we had our first lessons in mathematics we might just as well have been counting seeds as little yellow balls. When horticultural topics are introduced in schools pupils will readily become interested in them.

Discussion closed.

Moved that J. S. Harris be elected an honorary life member of this society. Carried.

J. S. HARRIS — It is useless for me to express my feelings to those who know me. I have been in the horticultural work all my life. I set the first shade trees in La Crosse in 1851. I set the first orchard in 1852, and have been president of the local society for several years. I feel grateful to you for the honor conferred upon me in making me a life member of your state society. I was the first man to put my name on the Minnesota state society in 1866. I see the interest in both states is growing very rapidly and our boys and girls are catching the inspiration from the old veterans. I caught much of my inspiration from one of your veterans, J. S. Stickney. In our Minnesota meetings we are having young people come in and we do not feel so badly as we did years ago when we began to think of casting off our old boots, that there would be no one left to take our places.

PRESIDENT — Those who read the Minnesota reports will find that they would be the same as the play of Hamlet with Hamlet left out, if the part Mr. Harris takes there was left out.

Adjourned.

HARDY ORNAMENTAL TREES, SHRUBS AND VINES.

By J. L. FISH, Omro.

Mr. President, Ladies and Gentlemen: — In presenting the topic of hardy ornamental trees, shrubs and vines, I shall give a brief description of such as are known to be perfectly hardy, beginning with the spruce among the evergreens.

EVERGREENS.

Spruce (Abies). Norway (Excelsa) — A lofty, elegant tree, of perfect pyramidal habit, remarkably elegant and rich, and as it gets age, has fine, graceful, pendulous branches; it is exceedingly picturesque and beautiful. Very popular, and deservedly so, and should be lagely planted. One of the best evergreens for hedges.

American White (Alba) — A tall tree, with loose, spreading branches and light green foliage.

Hemlock or Weeping (Canadensis) — An elegant pyramidal tree with drooping branches and delicate, dark foliage, like that of the Yew; distinct from all other trees. It is a beautiful lawn tree and makes a highly ornamental hedge.

Colorado Blue Spruce — A rare elegant tree, with foliage of a rich blue. One of the most distinct and striking of all the spruce family. A free grower and perfectly hardy.

Pine, Austrian — A strong, hardy grower, fine for windbreaks; grows rapidly on light, sandy soils; hardy.

Pine, Scotch — Like the preceding, its quick, strong growth makes it valuable for protective screens; very hardy.

Pine, White (Strobus) — A strong, rapid growing tree, with light delicate silvery green foliage.

Dwarf or Mountain (Pumila) — A low-spreading, curious species, attaining only the size of a bush; foliage similar to that of the Scotch.

Fir, Balsam, or American Silver (Balsamea) — A very regular, symmetrical tree, assuming the conical form even when young; leaving dark green above, silvery beneath.

Juniper, Swedish. Not quite so erect in growth as the Irish; foliage light yellowish green. It attains a height of ten to fifteen feet; perfectly hardy.

Juniper, (Juniperus). Virginian (Virginia)—The Red Cedar. A well known American tree, with deep green foliage; makes a fine ornamental hedge plant.

Juniper, Excelsa. A very ornamental, pyramidical growing tree; entirely hardy.

Succica Nana. A dwarf variety of compact habit of growth, leaves light green, retains its dotor perfectly in winter; entirely hardy.

Savin.— Sabina.— An evergreen of low spreading growth, dark green; does not lose its color in winter, and thrives well in the poorest soil.

Arbor Vitæ, (Thuja).—American (Occidentalis)—This plant is, all things considered. the finest evergreen for hedges. It is very hardy and easily transplanted, few or no plants ever failing if properly trained specimens are obtained. It grows rapidly and with little care, or rather by easy management, it soon forms a most beautiful hedge, very dense, and perfectly impervious to the sight. Of course it is never adapted to turn stock, but it forms a most desirable and ornamental screen to divide the lawn from other parts of the ground, or for any other purpose.

Arbor Vitæ, Pyramidalis. An exceedingly beautiful, bright variety, resembling the Irish Juniper in form; foliage deep green; color well retained in winter; perfectly hardy. Lhould have a place in every collection.

Arbor Vitæ, Tom Thumb. A very small compact little Evergreen, very fine foliage. Makes a beautiful ornament for a small yard or cemetery lot; fine for low hedges.

Arbor Vitæ, Hoveyi. A small tree, globular in form; foliage light green with a golden tinge, and very compact; hardy.

Compacta (Parsons')—Foliage light green; habit dwarfish and quite compact.

DECIDUOUS TREES.

Maple, Sugar. (A saccharinum.) We consider this the most desirable shade tree in cultivation for planting along drives or avenues. Moderate growers, long-lived; symmetrical habits.

Weir's Cut Leaved.— A variety of the silver maple, with slender, drooping shoots, and of a very graceful habit. The leaves are deeply and delicately cut which makes a beautiful tree for the lawn or park. It is a rapid grower but bears cutting back exceedingly well so that it may readily be kept in shape and within bounds. Few trees are better or more attractive either for the lawn, street or drive.

Silver-Leaved Maple.— A hardy, rapid-growing native tree, of large size. Valuable for producing a quick shade. Excellent for street planting.

Ash-Leaved Maple.— A distinct variety making a handsome lawn tree.

Larch (Larix). European (Europoea). An excellent, rapid-growing, pyramidal tree; also valuable for timber. Small branches drooping.

American Linden or Basswood.— A rapid-growing. beautiful tree, with very large leaves and fragrant flowers.

Catalpa Speciosa, (Hardy or Western Catalpa).— This early-blooming, upright-growing variety, appears to be much hardier than the common Syringafolia, having proved itself capable of enduring the severest winters of Wisconsin and Iowa, making when planted in groves, straight, symmetrical trees, suitable for posts or railroad ties, for which purposes it is one of the most durable timbers known, lasting in many instances, nearly or quite a century. It appears to thrive as far north as Dakota.

Mountain Ash (Pyrus). European (Aucuparia).— A fine, hardy tree; head dense and regular, covered from July till winter with large clusters of bright scarlet berries.

Oak-Leaved (Quercifolia).— A variety with large hoary lobed leaves; distinct and fine.

ORNAMENTAL SHRUBS.

Euonymous — Strawberry Tree.— A very ornamental and showy small tree, whose chief beauty consists in its brilliant berries which hang in clusters from the branches until midwinter; berries rose colored.

Berberis Vulgaris (European Berberry).— A fine shrub, blooming in May or June, with terminal drooping racemes of yellow flowers, followed later by orange-scarlet, edible fruit.

Purple-leaved Berberry — A beautiful shrub with persistent violet purple foliage; fine red berries in pendulous clusters. Very ornamental. Forms a handsome hedge.

Upright Honeysuckle — Red Tartarian. Beautiful pink and rose colored blossoms in June. White Tartarian. Flowers white; blooms in May and June.

Hydrangea paniculata grandiflora—(Large panicle—flowered Hydrangea.) Recently introduced from Japan. A variety of great value, perfectly hardy, with large and abundant foliage, and immense pyramidal panicles of white flowers, a foot or more in length, changing to pink, which appear in August and continue until frost. Most effective either singly or in groups, and a shrub of the greatest beauty and value; of all hardy flowering shrubs give me the beautiful hydrangea for permanent, showy effect. It commences flowering in July and continues until November. The plants should be cut back every spring at least one-half of last season's growth. This is the finest flowering shrub for cemetery planting we know of.

Syringa (Philadelphus.)

Gordonianus (Gordon's Syringa)—Flowers profuse; slightly fragrant; ten days later than other varieties.

Garland (Coronarious.) The common popular shrub, with pure white, delicately perfumed flowers.

Lonicera Tartarica (Tartarian Upright Honeysuckle.) A handsome, showy shrub, of spreading habit. with deep green foliage remaining until late; flowers of a delicate perfumed pink, produced in May in great profusion.

Snowball Tree—A well known favorite shrub, of large size, with globular clusters of pure white sterile flowers the latter part of May. This is popular, and justly so, easily grown and attractive, near by or at a long distance. It remains long in blossom, like the Hydrangea, which it resembles somewhat.

Purple Fringe, or Smoke Tree, should be in all collections too. Unlike any other flowering shrubs, blossoms resemble a cloud of smoke.

Rosea (Rose-colored Weigela). Perhaps the best known of all the Weigelas. Of erect growth and compact form, with handsome rose colored flowers in June. From China.

Philadelphus or Mock Orange. Grandiflora. A large growing shrub; flowers snow white; in great profusion. June to July.

Philadelphus. (Flore Pleno.) A dwarf variety, with double cream colored flowers.

SPIRÆA—(MEADOW-SWEET.)

The Spiræas are all elegant, low shrubs of the easiest culture, and their blooming extends over a period of three months.

S. Billardi (Billard's Spiræa). Rose-colored. Blooms nearly all summer.

S. Crenata. Dwarf in habit. Flowers dull white; free bloomer. June.

S. Callosa (Fortune's Spiræa). Has large panicles of deep rosy blooms; grows freely and blooms nearly all summer; fine.

S. Van Houttei. Large white flowers; free blooming; hardy. A splendid variety.

S. Thunbergii (Thunberg's Spiræa). Of dwarf habit and rounded, graceful form; branches slender and somewhat drooping; foliage narrow and yellowish green; flowers small, white, appearing early in spring being the first Spiræa to flower. Esteemed on account of its neat, graceful habit. Forces well in winter.

CLIMBING VINES.

Honeysuckles — Halleana (Hall's Japan Honeysuckle.) An almost evergreen honeysuckle of the grestest value, being entirely hardy, and of strong and vigorous growth. The flowers are exceedingly fragrant, of a pure white, changing to yellow, in oder much resembling a Cape Jasmine, and are produced inprofusion from May to December.

Monthly Fragrant. A fine, rapid growing variety; flowers large and very fragrant; color red and yellow; a constant bloomer.

Scarlet Trumpet. A strong, rapid grower; blooms very freely the entire season; bright red, trumpet shaded flowers.

Ampelopsis — Quinquefolia (American Ivy). A perfectly hardy climber, of rapid growth; fine covering for walls or unsightly objects.

Veitchii. A hardy climbing plant from Japan; it is a splendid plant for covering unsightly objects, as it clings to stone work, etc., with the greatest tenacity. The foliage is a bright glossy green, shaded with purple, changing in the fall to the brightest tints of scarlet, crimson and orange.

Dutchman's Pipe. A magnificent hardy vine of rapid growth, with very large heart-shaped leaves, and brownish flowers. resembling in shape a minature pipe; splendid for archways or verandas.

AMERICAN VARIETIES.

Clematis Coccinea — The Scarlet Clematis. This remarkably handsome climbing plant has proved to be one of the most desirable for any purpose where climbing plants are required. The plants is a herbaceous perennial the stem dying to the surface each winter (this is an advantage where an unobstructed view is required in winter). The vines attain the height of from 8 to 10 or 12 feet, beginning to flower in June and continuing until frost; single vines have from 20 to 30 flowers on each, and frequently as many as ten vines will start fron one crown each season. The flowers are bell shaped; in color a rich, deep, coral scarlet, shining as if polished and lasting a long time when cut. Indeed, one of the most beautiful plants for festooning is to be found in the Clematis Coccinea, with its pecular shaded green and elegantly curved and varied foliage. If it never flowered it would be a handsome climbing vine.

Flammula. A rapid growing vine; flowers small, white and very fragrant; fine for cemetery decorations.

Virginica (American White). A very rapid growing and hardy plant; seeds furnished with long, plumose, downy tufts; flowers small, white.

WEEPING TREES.

Willow (Laurel Leaved.)—A splendid ornamental small tree, with large glossy Laurel leaves, whence its name.

Willow (Wisconsin Weeping.)—A large tree with long drooping branches, similar to the Babylonica, but much hardier.

Birch (Cut-Leaved Weeping.)—Beyond questioned one of the most elegant of all weeping or pendulous trees. Its tall, slender, yet vigorous growth, graceful, drooping habit, silvery white bark and delicately cut foliage, presents a combination of attractive characteristics rarely met within a single tree.

Elm (Fulva Pendula.) — The most rapid growing of all Weeping Elms. Large fine foliage. When grafted high on the common white or red elm, soon makes a very handsome weeping tree. One of the finest trees for lawns.

POPULAR.

Populus. Large Leaved Weeping. (Grandidentata)—A variety having when grafted standard high, long slender branches like cords, which droop very gracefully; foliage large, dark shining green and deeply serrated.

MOUNTAIN ASH.

Pyrus. Weeping (Aucuparia Pendula) — A beautiful tree with staggling, weeping branches; makes a fine tree for the lawn; suitable for covering arbors.

REPORTS FROM LOCAL SOCIETIES.

EAU CLAIRE HORTICULTURAL ASSOCIATION.

OFFICERS.

President — Peter S. Price, Eau Claire.
Vice President — W. R. Culbertson, Eau Claire.
Secretary — R. Elwell, Eau Claire.
Treasurer — J. F. Case, Eau Claire.

MEMBERS.

P. S. Price, Eau Claire.
W. R. Culbertson, Eau Claire.
J. F. Case, Eau Claire.
Mrs. J. F. Case, Eau Claire.
Mrs. R. W. Culbertson, Eau Claire.
Mrs. R. Elwell, Eau Claire.
Mrs. L. G. Stone, Eau Claire.
Chas. E. Hazen, Eau Claire.
R. Elwell, Eau Claire.
L. G. Stone, Eau Claire.
J. C. Barland, Eau Claire.
G. W. Lufkins, Eau Claire.
Alfred Soper, Eau Claire.
Chas. E. Burce, Eau Claire.
Mrs. Wesler Sherman, Eau Claire.
M. W. Wisner, Eau Claire.
Jacob Garrett, Eau Claire.
F. E. Keefe, Eau Claire.
O. T. Remington, Amy, Dunn Co.
Andrew Mohult, Eau Claire.
Z. B. Stillwell, Eau Claire.
Mrs. Z. B. Stillwell, Eau Claire.
Mrs. Burroughs, Eau Claire.

COMMITTEES.

On Finance — M. W. Wisner, Frank Keefe, Chas. E. Hazen.
Fruits and Vegetables — A. F. Case, Alfred Soper, G. W. Lufkins.
Observation — O. T. Remington, Jacob Garrett, Chas. E. Burce.
Floriculture — Mrs. W. Sherman, Mrs. Burroughs, Mrs. R. Elwell.
On Experiments — J. F. Case, Z. B. Stillwell, W. R. Culbertson.

This association was organized on March 14, 1891, and holds a meeting on the second Saturday of each month. The place of meeting is in the court house at Eau Claire.

At the meetings of July, August and September fine exhibits of strawberries, raspberries, blackberries and gooseberries were made by Messrs. Price, Case, Culbertson and Stone.

The crop of small fruits in this section the past season was good, although the dry hot weather in August injured the blackberry crop to some extent.

The varieties of fruits grown are, of strawberries, Sharpless, Capt. Jack, Crescent, Mammoth, Lida, Bidwell, Bubach No. 5, Eureka, Haverland.

Of raspberries, Turner, Cuthbert, Philadelphia, Marlboro, Brandywine and Golden Queen.

Of blackberries, Ancient Briton, Snyder, Erie, Stone's Hardy and Taylor's Prolific.

Of gooseberries, Smith, Downing, Transparent and Industry.

Of currents, Fay's Prolific, White Grape, Red Dutch and Crandall's.

Of the larger fruits none are grown in this section except the Transcendent Crab, and that is badly affected with the blight.

The Association has started an experiment station for testing the value of new varieties of small fruits for this part of the state. These experiments will be conducted by a committee of three, elected for one, two and three years. The interest in our meetings is increasing, the attendance is better and the outlook is bright for the future prosperity of our Association.

R. ELWELL,
Secretary.

BROWN COUNTY H. & A. SOCIETY.

The secretary respectfully submits the following report of the transactions of the society for the year ending December 31, 1891:

I. MEETINGS.

During the year the society has held eight regular monthly sessions for the transaction of its appropriate business at times and places as follows:

Annual meeting January 3d, and regular monthly meetings February 14, March 14 and April 25, at the Business Men's rooms, city of Green Bay; Eighth Annual Strawberry Festival on the premises of President J. M. Smith, Green Bay, June 27; monthly meetings, July 25, on the premises of William Finnegan, town of Howard; September 25, at the residence of Thomas Wishart, town of DePere, and October 31, at the residence of Vice-President W. Harold Woodruff, town of Allouez.

II. BUSINESS TRANSACTED.

Annual reports of secretary and treasurer for 1890, rendered and accepted. Officers elected for 1891. F. W. Bascher's stock in the Fair and Park Association purchased for $540. Delegate elected to annual session of the Wisconsin State Horticultural Society at Madison. Report of delegate rendered and accepted. Resolutions adopted:

1. On Institute Work — *Resolved*, That the Brown County Horticultural and Agricultural Society heartily endorses the Institute work now carried on by the Board of Regents of the State University and earnestly prays that said work may be encouraged and sustained by ample appropriation of state funds for such purpose.

2. On Sugar Beet Industry — *Resolved*, That the senator and members of assembly representing the county of Brown in the legislature, are hereby requested by this society, to use all honorable means in their power to produce a sentiment among their associates favorable to the encouragement of the sugar beet industry.

3. On Bulletin No. 26 — *Resolved*, That President Smith be instructed to order directly from the experiment department of the University, a sufficient number of copies of Bulletin No. 26, on the sugar beet culture, to supply the members of the society, each with a copy, Six gentlemen were elected active members and two ladies honorary members of the society. The usual routine work of regular meetings, including the social noon festival was also duly transacted.

III. TOPICS DISCUSSED.

The Future of Brown County H. & A. Society: What Shall be its Special Object, and Course of Action?—The Project of Uniting the Work and Interest of the H. & A. Society with those of the Fair and Park Association.— The Organization of a Company and Building of a Factory for the Manufacture of Pickles.— The Farmers' Institute at DePere in March, and Farmers' Institutes in General.—The Value and Cultivation of Rye Crops.— The Importance and Practicability of Fruit Growing as a Business Industry and the Organization of Social Working Societies for the Creation of such an Industry.—The Construction and use of Movable Wire Fences.— New Crops for Brown County Farmers.— Flax, Sugar Beets, Pickles.— Droughts.— What Measures Protective and Remedial can Farmers Beneficially Employ in Times of Drought.— Artificial Irregation by Conduits and Artesian Wells.— Benefits of Cultivation in a Dry Season.— Best Way to Grow a Profitable Crop of Potatoes.— The Function of Sand in the Growth of Plants.— Protection, Provision and Provender for our Domestic Animals, Biped and Quadrupeds, During the Winter Season.

Original Essays and Selected Readings have been prepared and offered by lady members as follows:—Original: "Give the Children a Chance;" "Essentials of comfortable and wholesome farm homes;"—Selections from Chas. Dudley Warner's, A Summer in a Garden;" from the *Farmer's Review* on "The Atavism of Plants;" and from the *Weekly Wisconsin*, a piece entitled "Kind Words."

Under the present heading may also be mentioned the History of John M. Smith's Garden, by the owner; Extemporaneous addresses by several visiting gentlemen; and various other interesting offerings of Horticultural bearing.

IV. MEMBERSHIP.

Six new active and two resident honorary members have been admitted to the Society during the year. Also two active and two resident honorary members have been removed by death; thus making our present working membership, embracing the three classes, life, annual active and resident honorary, to consist as near as can now be ascertained, of 65 male and 40 female members.

OFFICERS.

The officers elected for ensuing year are:
President, J. M. Smith.
Vice-President, W. Harold Woodruff.
Secretary, Werden Reynolds.
Treasurer, Fred B. Warren.

VI. BOOKS, SEEDS, ETC.

A small invoice of seeds has been received from the agricultural department of the government, the past year, and distributed among the members.

Twenty-five copies of the annual report of the Wisconsin State Horticultural Society have recently come into the hands of the secretary, and are now here for distribution to those entitled to them under the provisions of Rule IV of the by-laws. The report is one of the most readable and instructive yet published by the state society.

VII. NECROLOGY.

Four highly respected and worthy members of the Society have, by dispensation of Divine Providence, been removed from our companionship during the year for which this report is rendered, two of the class designated as active, and two from that reported as resident honorary.

1. Thomas Bennett died March 31, 1891, aged 78 years, 3 months and 24 days. He was one of the original ten gentlemen who constituted the society at it its institution, January 30, 1874, and retained his membership till the close of his life. He was, therefore, a member for 17 years, 2 months and 1 day. He was elected treasurer at the first meeting, and held the office till February, 1878, when he was succeeded by Edson Sherwood. In February, 1879, he was re-elected to the same office and held it till succeeded by Wilhem Pamperim, January 8, 1881. The meeting at his house on the date of his re-election to the office of treasurer was one of the best attended and most interesting of all ever held by the Society. The records of the Society furnish a large number of excellent and instructive papers prepared and read by Mr. Bennett at the regular monthly meetings.

2. Rufus B. Kellogg died September 24, 1891, aged 54 years, 5 months and 9 days. He became a member December 20, 1879, and held honorable standing in the Society till his decease, a period of 11 years, 9 months and 4 days.

3. Alanson F. Lyon was duly elected an honorary member on the 11th of December, 1878 and died October 6th, 1891, age ninety-three years, three months and nineteen days, having retained his membership twelve years, ten months and fifteen days. For several years past it has not been possisible for him on account of his great age to attend the meetings of the society.

4. Rev. J. G. Henshal was duly elected an honorary member August 25, 1882, and died November 6, 1891, aged eighty-two years, eleven months and twenty-eight days. He was highly esteemed by the members of the society and until within about two years was frequently present at its meetings through the courtesy of President Smith.

This completes a list of seventeen gentlemen who have deceased while holding membership in the society; or if one other, who terminated his membership by withdrawal a year or two before his death be included, the whole number would be eighteen, an average of just one death annually during the entire existence of the society.

VIII. CONCLUSION.

When two full decades of the beneficent work of the Brown county H. & A. society shall have been fulfilled, which will occur in two years from the present date, it is to be hoped that some constant and competent observer will prepare for copy into its record book a portrayal in truthful and exhaustive contrast of the aspect and condition, horticultural and agricultural of Brown county at the close of the years 1873 and 1893; and thus lay before the farmers and the inhabitants generally, a clear and manifest exposition of the vast and invaluable benefits rendered them through the agency of the voluntary organization which began its life and it labors on the 30th day of January, 1874.

Respectfully submitted,
WERDEN REYNOLDS,
Secretary.

GREEN BAY, January 2, 1892.

SAUK COUNTY HORTICULTURAL SOCIETY.

The officers elected for the year ending December 11, 1892, are:

President — Wm. Tcole.

Vice-President — F. Johnson.

Secretary — A. Clarke Tuttle.

Treasurer — Mrs. E. G. Marriott.

It was voted to hold a wild flower show in early spring — a meeting in June, one in August and a Chrysanthemum show in November.

A. CLARK TUTTLE,
Secretary.

FREEMONT HORTICULTURAL SOCIETY.

Our society is still in existence. We have about twenty members, the most of whom take an interest in our meetings, and seek the annual reports. We have two regular meetings in the year — one in June and the meeting for electing our officers in January.

In Strawberries — the Crescent, Wilson, Captain Jack, and Sharpless, are still the favorites of our members, and I don't know but I might add, the only favorites.

But few blackberries or raspberries are raised, although both might be if our people would try.

Our present officers are:

President — C. F. Eaton.

Vice-President — Paul Scheisser.

Secretary — J. Wakefield.

Treasurer — Jacob Steiger.

Executive committee — W. A. Springer, Robert Callander, G. W. Holmes.

Delegate to State Society — J. Wakefield.

Our fruit trees at this date, April 1st, promise well.

J. WAKEFIELD,
Secretary.

EAST FREEDOM HORTICULTURAL SOCIETY.

This society has twenty-six members, and as there is one member from each family, one copy of the State Transactions goes into each home.

In the spring of 1890 an experiment was made by all members of the society; each one set out seventy-five Warfield strawberry plants. The plants were furnished free to the members by the society. Wilson, Sharpless, Jessie, Captain Jack and Cumberland were used for fertilizers. All beds of berries did well that were fertilized by any of the above named varieties. Four of the members believing fertilizers were not necessary did not set any, consequently failed to get any fruit.

The following officers were elected for the ensuing year:

President — Herman Voll.

Secretary — Chas. Hirschinger.

Treasurer — Geo. Armbeacter.

KILBOURN HORTICULTURAL AND IMPROVEMENT SOCIETY.

The annual meeting was held December 18, 1891, and the following officers were elected:

President — A. Chamberlain.

Vice-President — Geo. Campbell.

Secretary — Lillian Chanter.

Treasurer — Theron Borst.

The society has rented a suitable hall and intends to have a library and and other facilities for the study of horticulture and its many branches. Meetings will be held bi-monthly, and we hope, with the assistance of good essays and recitations, to command a good attendance. We also hope some trial ground for the cultivation of trees and plants.

LILLIAN CHANTER,
Secretary.

LA FAYETTE COUNTY HORTICULTURAL SOCIETY.

Our membership has increased, during the year, to twenty-eight. We think we have aroused considerable interest and are in hopes of being useful in the future. The following officers were re-elected:

President, Warren Gray, Darlington.

Secretary, Milford Jenks, Darlington.

Treasurer, John Rogers, Darlington.

We have held two meetings of the Society since organization, which were fairly well attended and we seemed in a fair way to prosperity as a society, but bad weather and worse roads at the time we should have held meetings have kept us from making much progress; however, we have aroused some interest as evidenced by the fact that certain agents from nurseries say quite a number have inquired of them about the workings of the Society and expressed an intention of becoming members and attending the meetings of the Society, so we are in hopes of being useful in time; the list of officers remains unchanged.

MILFORD JENKS,
Secretary.

GRAND CHUTE HORTICULTURAL SOCIETY.

The past year has been one of great disaster to fruit in this immediate locality. A severe hailstorm on the 13th of July destroyed nearly all the apples and greatly injured grapes, raspberries and blackberries; but our members are not discouraged. There is an increasing interest in horticulture, fruit gardens are increasing in size, and improvements have been made in the adornment of many homes with vines and flowers.

Besides the few regular meetings of the year, the most important work done by the society was the observance of arbor day by planting trees and vines and flowers in the school grounds.

On that day parents and children met at the school-house with trees and plants, some of them purchased, others taken from home gardens, and after listening to recitations and singing by the children and appropriate remarks by the parents, all partook of a picnic dinner, after which the trees, shrubs and flowers were planted, all present assisting in the work, which was done so successfully that District No. 4, town of Grand Chute, was awarded the Outagamie County prize, offered "by friends of education" for the greatest improvement in the decoration of school-houses and grounds with trees and flowers.

The election of officers resulted in the choice of M. B. Johnson, President; Mrs. C. E. Bushnell, Secretary; A. A. Winslow, Treasurer. M. B. Johnson was chosen delegate to the winter meeting.

MRS. D. HUNTLEY,
Secretary.

JANESVILLE HORTICULTURAL SOCIETY.

But little has been done by this society the past year. It was intended to hold a fall or winter meeting at Janesville, but as many of the members were interested in the Rock county agricultural society and made exhibits at the fair, the winter meeting was dropped.

Members of our society captured most of the prizes in the fruit department at the Rock county fair, as well as taking quite a number at the state fair.

At the annual meeting held January 4th, Messrs. Geo. J. Kellogg and E. B. Heimstreet were elected delegates to the meeting of the State Horticultural Society, at Madison; Mr. Kellogg being delegated to present a paper at that time.

The officers of the society for 1892 are:

President — Geo. J. Kellogg.
Treasurer — J. B. Whiting.
Secretary — E. B. Heimstreet.

WAUPACA HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

This society still has an existence, though I am unable to report much progress during the year. Last spring the society made an effort to purchase and improve a plat of ground to be used as a park. A beautiful location was selected embracing about eight acres of land. Two meetings were held on the park grounds and some work done by way of improvements. In consequence of the severe drouth further improvements were postponed until another year.

The society numbers about fifty members, many being actually engaged in horticultural pursuits. Three meetings were held during the year, which were both instructive and profitable.

The following officers are to serve for the coming year:

President — W. H. Holmes.

Secretary — F. Rich.

Treasurer — Mrs. A. D. Barnes.

F. RICH,
Secretary.

WAUPACA COUNTY HORTICULTURAL SOCIETY.

The annual meeting of our society was held December 22, 1891. The following officers were elected:

President — G. W. Taggart.

Vice-President — F. Masters.

Secretary — F. A. Harden.

Treasurer — Albert Smith.

Executive Committee — A. Balsley, P. Waterson, E. Wrightman.

Delegates to State Society — Wm. Springer, F. A. Harden.

F. A. HARDEN,
Secretary.

BELLEVILLE HORTICULTURAL SOCIETY.

This society was organized by M. A. Thayer, March 8, 1892, with a membership of 28.

The following officers were elected for the ensuing year:

Mrs. Mary J. Caldwell, president.

Mrs. Art Silver, vice-president.

Mrs. J. H. Gould, secretary.

Mrs. S. D. Kirkpatrick, treasurer.

Executive committee — Jas. Sullivan, Mrs. W. S. Wheelwright, John Gillet.

NAMES OF MEMBERS.

John Fritz, Montrose, Wis.
Jas. Sullivan.
Jas. H. Gould.
John A. Ross.
Z. A. Ross.
Chas. McClelland.
Edward Maas.
Wm. Crocker, Montrose, Wis.
S. D. Kirkpatrick.
Thos. Best.
John Gillett.
Fred Luchsinger.
M. F. Ross.
Mrs. Mary J. Caldwell.
Mrs. W. S. Wheelwright.
W. T. Williams.
Mrs. S. Slater.
Jas. Greenwood.
W. S. Ross.
C. C. Pease.
D. S. Smith.
Art Silver, Dayton, Wis.
Frank White, Dayton, Wis.
C. E. Brooks, Dayton, Wis.
J. W. Dewitt.
Robt. Richards.
W. N. Caldwell.
D. L. Lawrence.

MRS. J. H. GOULD,
Secretary.

WAUKESHA COUNTY HORTICULTURAL SOCIETY.

The Waukesha county horticultural society held no meetings during the year 1891.

The officers for 1892 are:

President — A. Cook, Waukesha.

Vice-President — A. U. B. Dez, Pewaukee.

Treasurer -- A. I. Gale, Waukesha.

Secretary — Isaac Gale, Waukesha.

Executive committee — G. P. Peffer, O. T. Clinton and S. Eales.

Annual meeting adjourned subject to the call of the president.

ISAAC GALE,
Secretary.

SPARTA HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

The past has been the most prosperous year since the organization of this society. We have a large and active membership.

The large crop of 1891 has given the small fruit industry a great impetus here, and no doubt the acreage of 1892 will be increased over any previous year.

The annual meeting was held at the Armory January 26th, the second day of the farmers' institute; it was an all day meeting, with banquet at 1 P. M. The attendance was large and many interesting papers were read.

The following officers were elected for the ensuing year:

M. A. Thayer, President.
Geo. Hanchett, Vice-President,
W. H. Hanchett, Secretary.
C. E. Hanchett, Treasurer.

Executive committee — Z. K. Jewett, L. S. Fisher, Mrs. J. J. French Mrs. M. A. Thayer, Mrs. T. G. Gould, Mrs. Arthur Jewett.

L. S. FISHER,
Secretary.

LODI HORTICULTURAL AND IMPROVEMENT SOCIETY.

LODI, WIS., March 27, 1892.

B. S. HOXIE, *Secretary:*

At the close of the Farmers' Institute, held February 26, M. A. Thayer organized a society here to be known as the Horticultural and Improvement Society of Lodi. Temporary officers were elected, and adjourned to meet Saturday, March 26, when the following officers were elected for the year 1892:

C. L. Pearson, President, Lodi.
J. A. Parr, Vice-President.
Mrs. James Richmond, Secretary.
Albert Lovering, Treasurer.

Our membership is now about thirty. Many of us are enthusiastic horticultural students, and we intend to "pump" our more learned brothers in horticulture and learn from their experience. Package of books received.

C. L. PEARSON,
President.

AMHERST HORTICULTURAL AND AGRICULTURAL ASSOCIATION.

The officers are the same for 1892 as for 1891, and the membership about the same. There has not been the interest that the cause demands for a year past. We hope for a better showing for the year to come. S. N. Buswell represented the association at Kilbourn City at the summer meeting, and J. H. Felch was sent as delegate to the annual session of the state society. Officers for the year 1892 are:

G. W. Thompson, President.
A. J. Smith, Vice.President.
J. H. Felch, Secretary.
S. N. Buswell, Treasurer.
E. Graves, Corresponding Secretary.

J. H. FELCH,
Secretary.

RIPON HORTICULTURAL SOCIETY.

The same officers of this society continue for another year. Our membership has increased to forty-five.

President — L. G. Kellogg.
Vice-President — Mrs. L. K. Hood.
Secretary — A. S. Crooker.
Treasurer — E. Woodruff.

A. S. CROOKER,
Secretary.

EVANSVILLE HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

At the annual meeting of this society the following officers were elected to serve one year or until their successors were chosen:

Prof. J. Emory Coleman, President.
Mrs. J. R. West, Vice-President.
W. McFarlane, Secretary.
Mrs. A. M. Barnes, Treasurer.
B. S. Hoxie, E. Blakely and Mrs. Vie H. Campbell, Executive Committee.

W. McFARLANE,
Secretary.

SOUTH WAYNE HORTICULTURAL SOCIETY AND IMPROVEMENT ASSOCIATION.

I would report about sixty members in this society.

S. W. Usher, President.
S. M. Briggs, Vice-President.
F. E. Pease, Secretary.
Mrs. L. M. Heindel, Treasurer.

F. E. PEASE,
Secretary.

REPORTS OF AD INTERIM COMMITTEES.

REPORT OF C. CHURCH, WALWORTH, WIS.

I have a few barrels of Fameuse now (February) that are well preserved and luscious to eat. I raised a fair crop of grapes, cherries, gooseberries, currants, blackberries, red and black raspberries and strawberries, and I know they can all be successfully grown in this section of the country.

Peaches, plums and pears are quite uncertain with me.

REPORT OF GEO. C. HILL, ROSENDALE.

In consequence of the excessive drought of the past season, our vegetable and fruit gardens came the nearest to being a failure, we have known for years. Seeds would not germinate unless artificially watered. Currants, gooseberries, raspberries and grapes were a fair crop. Strawberries and blackberries came to naught. I was told by one of the most extensive blackberry growers of Ripon, that his estimated loss of blackberries was 700 bushels, dried up on the bushes.

Part of our orchard seeded to clover produced small, poor flavored apples. Some Duchess standing in cultivation, bore fine fruit.

The apple curculio is on the increase, already doing much injury.

A leaf-blight came on the De Soto and some other varieties of plums.

Nearly all the cherry trees were defoliated by slugs. It looks now as if we shall have to declare war or be drawn from the field. It is a part of the mission of this society to tell us what weapons we should use in this warfare.

Fellow members of the Wisconsin Horticultural Society, there is plenty of work on hand. Evidently the time has not yet come to disband or rest from our labors. Besides the problems of climate, soil, varieties, insects and fungi, there is a lack of interest in horticuture among farmers that is surprising. Let me tell of a few things I saw, and some that I did not see, during a 75 mile ride last autumn, through one of the finest sections of the state. There were appearances of wealth and prosperity. Fine dwellings and great barns were the rule. We passed 145 farm residences where a fair view was had of the surroundings. A few old apple trees remain on most farms. A good many young fruit trees were planted, but generally had an appearance of being starved and neglected. About one place in ten did not show the least sign of a garden. Nine-tenths had a cabbage patch; so much to be thankful for. One in twenty showed an asparagus bed; doubtless dandelions were preferred. One in twenty-five tried to have a good garden; pity on the other twenty-four. Four in the whole lot had currant bushes, twice as many had red raspberries, one had blackberries, thirteen had grape vines, one had a first-class garden for both vegetables and small fruits, except that it was not properly cared for. Not a single place had a garden kept in the condition and containing the varieties of fruits and vegetables which the market garden grows for the city customers. Evidently there is work for missionaries.

REPORT OF WARREN GRAY, DARLINGTON, WIS.

We have to report another season of severe drouths in southwestern Wisconsin. The spring opened cold and dry, continuing so until May 22nd, greatly damaging newly set small fruit plants, there being not moisture enough in the soil to keep them alive during the long hot days and cold nights.

On May 22nd we had one inch of rain and again on the 25th, but the subsoil being so very dry its effects were not lasting. On the 27th of May we had a severe frost with wind from northeast, damaging strawberries greatly and destroying many apples. I had about twenty young Duchess trees well filled with apples the size of buck-shot, all of which were killed, while willow twigs, which were on somewhat higher ground and were more backward, escaped without injury.

Our strawberries were so badly frozen they were almost a failure, while a neighbor whose plantation was somewhat protected from the northeast wind had a good crop. On June 2nd we were visited by a severe rain and hail storm, accompanied with heavy wind. About two inches of water fell in half an hour. From that time we had occasional showers until July 18th, and no more to speak of until September 28th — forty days without. First frost to do damage October 16th. We had sufficient rain during the late autumn to wet the soil one and one-half feet, leaving us in good shape for the winter.

Strawberries were a good crop where the frost did not harm them, but many crops were destroyed. Raspberries and blackberries a good half crop.

REPORT OF DANIEL WILLIAMS, SUMMIT, WIS.

My horticultural observations in this locality, have not been as thorough as I intended to make them. I briefly report as follows:

The apple crop of the past year was nearly a failure in Waukesha county, caused apparently by the blighting wind of June 4, 1890, which killed a great part of the new growth of wood of that year, particularly upon the younger trees of rapid growth. Trees protected from the effects of the above mentioned storm, produced good crops of fruit of unusual good quality.

But few apples are grown in this vicinity for home use, and none for market.

Where strawberries, raspberries, currants and blackberries were properly mulched and otherwise well cared for, good crops of fruit were produced.

Cherries were a large crop and of good quality. Blackberry canes left without any winter protection came through the past winter in fine condition.

Grapes produced an unusually fine crop, free from any mildew or other injurious influences.

Not one farmer in twenty in this vicinity raises all the family needs of the fruits usually grown in this state.

The farmers of this locality as a rule do not have creditable fruit and vegetable gardens.

There is an increasing interest shown in the cultivation of small fruits for family use and the general market.

Grapes are a success here where properly planted and cared for.

REPORT BY FRED A. HARDEN, WEYAUWEGA.

The winter of 1890 and '91 were both favorable to trees and small fruit. The spring and summer of 1891 can be put down as a season of drouth, from April 14 to June 16 — 64 days — there was not enough rain to wet the ground to the depth of one-quarter of an inch.

The last of June and the first of July had small amount of rain.

The last of July, August and part of September was without rain and nearly everything burned up. There was not a half a crop of anything grown. There is a large variety of both the Standard and seedling apples· Duchess, Tetofsky, Fameuse, Hass, Wealthy, Wolf River, has done well here. We have 300 to 400 Seedlings, and many are very promising. The Alden, Jenny, Rose, Weyauwega, Waupaca and President Smith are a fe of prominence.

Strawberries — Wilson and Crescent still take the lead as a market berry.

Red raspberries — Morlboro and Cuthbert stand first.

Black raspberries — Ohio and Gregg are the most cultivated.

Currants — Red Dutch, White Grape, Cherry and Victoria.

Grapes — Worden, Moore's Early, Lady, Concord, Agawam and several others take the first place.

The yield of fruit was very light, about one-quarter of a crop in most cases was gathered.

PRICES.

Apples	$3.00 per bbl.
Strawberries	.12½ per qt.

Red and black raspberries, blackberries, cherries and currants averaged 10 cents per quart. There are several parties commencing to raise small fruit for market, but small quantities as yet.

REPORT OF M. GIBBONS, BERLIN, WIS.

The last winter was a favorable one in regard to pleasant and desirable weather, and fruit of all kinds gave prospect of a bountiful crop for 1891.

In regard to the strawberry crop the excessive drouth of May and June caused a very light crop, with some growers, owing to location of land, almost a total failure, particularly the old bed. Many varieties have been tried here, but we find the Wilson the standard for all purposes. The Jessie is of delicious flavor but a scanty producer.

The drouth also effected the red and black raspberries, not yielding half a crop, and, owing to weak canes, very poor prospects for 1892.

Blackberries in blossom gave promise for a heavy crop, but turned out nearly a failure excepting amongst growers who had them heavily mulched, which saved the fruit as well as increasing growth of canes for 1892.

Apples a failure in quantity and quality.

Grapes quite a good crop in quantity, and quality excellent. The unusual warm weather of September ripening them finely. Good prospects for an extra crop the coming season.

Thus far we have had a mild and delightful winter.

Small fruits increasing in acreage in this vicinity, and likely to do so on account of a cannery being started here.

REPORT OF MRS. MARY HARTLEY, ONOLASKA.

The past season has been one of the most favorable ever known in this part of the county for all kinds of fruit. Wherever there was an apple tree alive it bore fruit abundantly. The apples in this county are most all fall apples, a winter apple is the exception. There is very little done as regards setting out apple trees, but small fruits are being planted more every year, especially strawberries and grapes. The grape crop was very large and prices low, but it is not the home grown crop that makes low prices, but the quantities that are shipped in. It is the same with all kinds of fruit, it is shipped in such large quantities from the south that the price is down before the home grown gets in the market.

Gooseberries and currants are an exception; it is seldom there is enough of them raised or shipped in to supply the demand, and I think there will be quite an increase in the setting out of those two fruits the coming spring. All small fruits can be grown here abundantly with ordinary care but not half the farmers grow enough for their own use, but I think that more are doing so every year.

The Worden grape seems to be the best of the dark grapes that is grown here, and commands the best price; the Delaware, the smallest yielder, but in demand. This report is very inadequate, as I really am not well enough posted to give a thorough report.

GREEN BAY DISTRICT.

Mr. President, and Members of the Wisconsin Horticultural Society.— The season of 1891 has been, and probably will long be remembered as one of almost uninterrupted drouth from early spring until late in the fall. The result of this was that the strawberry, raspberry, blackberry and currant crops were far below the average, except where irrigated.

This, the most of our growers are unprepared for. The final result was that but little money was made upon the small fruits of our district last year.

The apple crop proved better than was anticipated, and was possibly half of an average crop. We have had but little winter killing of orchards for a few years past.

In all of the small fruits, many varieties of grapes included, it is doubtful whether, when given fairly good winter protection, any portion of the state, or the northwest, will excel northeastern Wisconsin in growing small fruits.

J. M. SMITH.

REPORT OF D. C. CONVERSE, FORT ATKINSON, WIS.

Following the open winter of 1890–91 came one of the most unusual springs on record. For a few days after the frost came out work proceeded in the usual way, with good weather for digging and setting plants. Then followed about a week of such extremely warm weather as to bring out full foliage before one-half the nursery stock of our section had been delivered and planted.

Suddenly the weather turned cold, with heavy, dry winds which retarded planting and caused fear among the planters that stock set then would be a total loss.

The strawberry crop was considerably shortened by late frosts; the old beds having probably one-half of all blossoms killed. Although the main crop was fairly good, it was very mnch shortened by the dry weather accompanied by hot winds. Prices ranged at from six to ten cents, and the crop as a whole was quite satisfactory.

The raspberry crop was good and brought from nine to twelve and one-half cents per quart.

On account of the extremely dry weather of 1890, the blackberry canes were unusually light, but they matured a fair crop of berries which sold at from eight to ten cents per quart.

Some patches of blackberries that had no winter protection turned out fully as good, if not better, than those protected.

Grapes on high land not affected with frost turned out a fine crop. Other vineyards, not located as favorably, were killed back two and even three times. The only wonder is that the vines could revive at all. They managed to rally and produce a fair crop of grapes. The quality was unusually fine owing to our long, warm fall.

The apple crop was very light in our locality, while more cherries were marketed than for several years.

What a promise of fruit was made by the plum trees; we noticed a clump of twelve or fifteen De Sota and Forest Garden trees, that were literally a white mass of blossoms. Soon after the fruit had set, there came a second crop, not of blossoms, but of green lice, completely covering leaf and branch. Not having a force pump or sprayer at hand, the question arose as to how to get rid of the lice. Supposing that kerosene, in a homeopathic way, was the proper remedy, and realizing that something must be done at once; application was made in an allopathic way. After jarring the lice off, rags soaked in pure kerosene were tied around the trees and the experimenter watched for the next move. The lice immediately started for the tree-tops, stopped and held council on the rags, then with the war-cry of Excelsior went at their deadly work.

Results — The lice survived and all but three or four trees died. What killed the trees? Can we battle the louse and curculio so as to grow plums successfully? If so, how?

After picking strawberries, beds no longer to be kept for fruiting were plowed and planted to Yankee corn and with very satisfactory results, as a fine crop of fodder was raised and the ground pretty well subdued. The beds to be kept were mowed, cleaned of the thickest of the mulch and then burned and plowed out. The work of hoeing was reduced at least fifty per cent. by the above method.

Notwithstanding the drawbacks attending the fruit business the past year, it has been fairly profitable, and although the new strawberry beds are pretty light, we think the prospects for fruit growers are bright for 1892.

Convention adjourned Friday morning, February 5, 1892.

B. S. HOXIE,
Secretary.

SECRETARY'S PORTFOLIO.

ARTICLES SELECTED AND CONTRIBUTED.

REPORT OF TRIAL STATION WORK.

By E. S. Goff,

Horticulturist to Wisconsin Agricultural Experiment Station.

The following report is mainly condensed from the reports of the managers of the three trial stations, viz: A. L. Hatch of Ithaca, M. A. Thayer of Sparta and Fred A. Hardin of Weyauwega.

The varieties that failed in the season of 1890 were replanted in the spring of 1891, so far as the trees and plants could be secured. In addition twenty-five plants of each variety of strawberries set in 1890, were planted out in a new bed in order to give the sorts a more thorough trial. The following varieties were planted out last spring (1891), for the first time. With a few exceptions, two trees were planted of the apple, plum and cherry, four or six plants of the raspberry and twelve of the strawberry.

Varieties planted in the spring of 1891 at the trial stations of the Wisconsin State Horticultural Society.

Ithaca.	Sparta.	Weyauwega.	From whom obtained.
		Apple.	
Alden	Alden		Wm. A. Springer.*
	Antinovka	Antinovka	A. Clark Tuttle.*
	Antinovka†		Iowa Agc'l College.
		Berlin	Clark Hewitt.*
Bethel	Bethel	Bethel	I. Gale & Son.*
		Bog White	Iowa Agc'l College.
	Borsdorf	Borsdorf	A. Clark Tuttle.*
Crocker	Crocker		Wm. A. Springer.*
		Cumed?	Iowa Agc'l College.
Del. Red Winter†	Del. Red Winter	Del. Red Winter†	G. J. Kellogg & Son.
	Emmons	Emmons	A. Clark Tuttle.*
	Forest	Forest	F. K. Phoenix.*
Garfield	Garfield	Garfield	J. V. Cotta.
Gideon	Gideon	Gideon	Coe & Converse.*
		Golden Russet	Iowa Agc'l College.
Grundy	Grundy	Grundy	Jewell Nursery Co.

Apple.— Continued.

Ithaca.	Sparta.	Weyauwega.	From whom obtained.
		Hoadley	Chas. Hirschinger.
	"Hybrid Seedling"		A. D. Barnes.*
	Hyslop		A. Clark Tuttle.*
	Johnson's Seedling		A. D. Barnes.*
Jones' Mammoth	Jones' Mammoth	Jones' Mammoth	A. C. Perry.
Judson	Judson	Judson	Jewell Nursery Co.*
Maple	Maple	Maple	Jewell Nursery Co.*
McIntosh Red	McIntosh Red	McIntosh Red	I. Gale & Son.*
"No. 3" (seedling)			Wm. A. Springer.*
		No. 3 Orel	Iowa Agc'l College.
		No. 4 Orel	Iowa Agc'l College.
		No. 5 M	Iowa Agc'l College.
		No. 8 M	Iowa Agc'l College.
		No. 9 Vor	Iowa Agc'l College.
		No. 12 M	Iowa Agc'l College.
		No. 15 M	Iowa Agc'l College.
	No. 18 M†	No. 18 M	Iowa Agc'l College.
	No. 22 M		Iowa Agc'l College.
		No. 24 M	Iowa Agc'l College.
	No. 27 Orel	No. 27 Orel	Iowa Agc'l College.
	No. 35 M		Iowa Agc'l College.
	No. 46 (seedling)	No. 46 (seedling)	Jewell Nursery Co.*
		No. 50 Vor	Iowa Agc'l College.
		No. 56 M	Iowa Agc'l College.
		No. 56 Vor	Iowa Agc'l College.
	No. 75 M†	No. 75 M	Iowa Agc'l College.
	No. 88 Vor	No. 88 Vor	Iowa Agc'l College.
	No. 200†	No. 200	Iowa Agc'l College.
No. 228 A			Jewell Nursery Co.*
		No. 252	Iowa Agc'l College.
		No. 257†	Iowa Agc'l College.
	No. 361	No. 361	Iowa Agc'l College.
	No. 379†		Iowa Agc'l College.
		No. 468	Iowa Agc'l College.
Okabena	Okabena	Okabena	Jewell Nursery Co.*
Patten's Greening	Patten's Greening		C. G. Patten.
	Red Anis‡		
Rose			Wm. A. Springer.*
Russian Rambo	Russian Rambo†	Russian Rambo	A. C. Perry.
		Sarah	Clark Hewitt.*
Shiawasse Beauty	Shiawasse Beauty		C. G. Patten.
	Striped Anis		Iowa Agc'l College.
Thompson	Thompson	Thompson	Jewell Nursery Co.*
	Torel†		Iowa Agc'l College.
	Walworth Pippin	Walworth Pippin	F. K. Phoenix.*
	Waukau Sweet		A. D. Barnes.*
Weyauwega	Weyauwega		W. A. Springer.*
	Wisconsin Spy		A. D. Barnes.*
Wolf River	Wolf River		Wm. A. Springer.*
		Wis. Russet	Clark Hewitt.*
	Yellow Sweet‡	Yellow Sweet	A. Clark Tuttle *

Pear.

Ithaca.	Sparta.	Weyauwega.	From whom obtained.
	Bessemianka	Bessemianka	A. Clark Tuttle.*
	Gakovka†	Gakovka	A. Clark Tuttle.*
Idaho			I. Gale & Son.*

Plum.

Ithaca.	Sparta.	Weyauwega.	From whom obtained.
Cheney		Cheney	J. S. Harris.*
Hungarian			Iowa Agc'l College.
Lady red			Iowa Agc'l College.
Moldovka			Iowa Agc'l College.
Orel No. 19	Orel No. 19		Iowa Agc'l College.
Orel No. 20	Orel No. 20		Iowa Agc'l College.
Rockford	Rockford		C. G. Patten.
Yellow Vorenesh			Iowa Agc'l College.

Ithaca.	Sparta.	Weyauwega.	From whom obtained.
		Cherry.	
Baender			Iowa Agc'l College.
Bessarabian	Bessarabian†	Bessarabian†	Iowa Agc'l College.
	Brussels Braune†	Brussels Braune†	Iowa Agc'l College.
Cerise de Ostheim			Iowa Agc'l College.
Double Natte		Double Natte†	Iowa Agc'l College.
Frau Michel			Iowa Agc'l College.
George Glass			Iowa Agc'l College.
Griotte du Nord		Griotte du Nord†	Iowa Agc'l College.
King's Amarelle			Iowa Agc'l College.
			Iowa Agc'l College.
Lutovka		Lithaner Weischell†	Iowa Agc'l College.
No. 23 Orel			Iowa Agc'l College.
No. 24 Orel		No. 24 Orel†	Iowa Agc'l College.
No. 25 Orel			Iowa Agc'l College.
No. 27 Orel		No. 27 Orel†	Iowa Agc'l College.
Orel Sweet			Iowa Agc'l College.
Shadow Amarelle			Iowa Agc'l College.
Sklanka	Sklanka†	Sklanka†	Iowa Agc'l College.
Strause Weischel			Iowa Agc'l College.
		Shrubs.	
Caragana Redouski		Car. Redouski	Iowa Agc'l College.
Lonicera Albertii		Lon. Albertii	Iowa Agc'l College.
Lonicera elegans.		Lon. elegans	Iowa Agc'l College.
Lonicera gracilis		Lon. gracilis	Iowa Agc'l College.
Philadelphus, sp			Iowa Agc'l College.
		Rosa Rugosa	Iowa Agc'l College.
		Strawberry.	
"D. & D."	"D. & D."	"D. & D."‡	J. A. Dobbins.*
Governor Hoard	Governor Hoard	Governor Hoard	Wis. Exp't Station.*
Great Pacific	Great Pacific	Great Pacific	Geo. J. Kellogg & Son
Haverland			E. E. Freeborn.*
Michel's Early	Michel's Early	Michel's Early	Geo. J. Kellogg & Son
Monadonk		Monadonk	Phineas Crosby.*
Mount Holyoke	Mount Holyoke	Mount Holyoke	Phineas Crosby.*
Parker Earle	Parker Earle	Parker Earle‡	Geo. J. Kellogg & Son
Pearl	Pearl	Pearl†	Geo. J. Kellogg & Son
Princess	Princess	Princess	John C. Kramer.
Shuster's Gem‡	Shuster's Gem	Shuster's Gem	Wis. Exp't Station.*
		Raspberry.	
Kansas	Kansas	Kansas	A. H. Griesa.
Older's Seedling‡	Older's Seedling	Older's Seedling	Geo. J. Kellogg.
Spry's Early‡	Spry's Early	Spry's Early	Coe & Converse.*

* No bill rendered to the Society. † One dead. ‡ All dead.

The attempt was made to have the varieties in the three trial stations exactly the same but as appears from the above table the attempt has not been successful. Some of our donors have predjudices that prevent them from being equally generous to the different stations. But the chief cause of the irregularity in plantings came through Prof. Budd's entire disregard of the order sent him. On Feb. 11th, 1891, I asked Prof. Budd by letter to furnish "six trees each of your ten most promising late keeping Russian apples and four to six of your best plums and cherries for our trial stations." This order contemplated two threes each of ten varieties of the most promising Russian apples and of four to six of the best plums and cherries to each of the three trial stations. How well this order was obeyed appears from the preceding table. It would seem that he sent what he chanced to have left, or what was most convenient. The trees would have been returned to Prof. Budd had I been aware of the manner in which he had filled the order before they had been planted.

A small exhibit of strawberries from the different trial stations was made at the summer meeting at Kilbourn City. While these samples did not compare favorably in appearance with those of the professional exhibits, they served as encouraging reminders that our work is already bearing fruit.

The following condensed notes are appended from the reports of the individual stations:

FROM A. L. HATCH OF ITHACA — NOTES ON SMALL FRUITS.

Strawberries. Warfield No. I (Sandoval). Fruit darkred with a fine gloss, flesh dark red, solid, sprightly, of good flavor; seeds green, red or golden, exserted; size good but not largest; calyx green changing to brown, recurving, giving the picked fruit a ragged look; considerable neck on the berries and the hull parts too easily from the fruit. This variety is very prolific of plants. Flowers imperfect.

Cumberland. Flowers perfect; fruit round, light red with pinkish-white flesh, often hollow; calyx greenish brown, lies closely to the fruit but parts from it too easily; seeds brown and few.

Crawford. Flowers perfect; one third as prolific of plants as Warfield No. 1 but more robust; fruit firm, juicy, pink-fleshed, melting, good; calyx brown or green, double spreading.

Yale. Flowers perfect; fruit dark and solid, flesh spicy, flavor fair; seeds very abundant, green, exserted; plant very robust; fruit ripens very late.

Eureka. Flowers imperfect; almost as prolific of plants as Warfield No. 1; fruit very irregular, light red, seeds golden, exserted, flesh light red, juicy, solid, of fair quality; calyx slightly spreading, green.

Great Pacific. Flowers imperfect; a very rank grower; fruit full red, with golden inserted seeds; calyx green, adherent; flesh red, juicy, good; fruit irregular, round-conical.

Thompson's No. 5. Only moderately good; flowers perfect.

Thompson's No. 9. Flowers imperfect; plant fairly robust, productive; fruit medium, dark red; flesh pink and firm, of very good quality; seeds golden; calyx large, recurved on neck.

Tippecanoe, Viola and Thompson's No. 1, have perfect flowers; Thompson's No. 8 and 12 have imperfect flowers. Owing to extreme drouth, no definite conclusions can be given of the first fruiting of these varieties.

Raspberries. Palmer. This variety gave a fine crop (ten quarts) on the six one year old plants; fruit glossy black without bloom, of medium size; canes thickly set with briers, forming young plants readily. As an early black-cap, this is very promising.

Winona and American Everbearing each bore a moderate crop of good sized berries with a too heavy gray bloom.

Ada had too much bloom.

Progress is a small early black-cap that gave a fair crop of fruit, and plenty of young tip plants.

Muskingum bore a few berries of the purple type. As the bush roots from the tips, this might be called a red or purple cap.

Child's "Japan Wineberry" made a beautiful bush covered with red spines and bore a few small tart, orange-colored berries that were covered with a mossy calyx until ripened, when they appeared outside. The berries separate from the calyx like the black-caps. The fruit ripened after all other raspberries. Unless the plants fruit better on full-size bushes, they will have little value.

Thompson's Early Mammoth blackberry killed to the ground even with winter protection, and is doubtless too tender here.

A few plants of each variety of raspberry have been left unprotected to test their hardiness. Owing to extreme drought, the growth of strawberry plants the past season was very poor. Apple trees set in the spring of 1890 grew fairly well, but some of the little trees set last spring may be too weak to endure the winter. The wood is well ripened on all trees this fall.

FROM M. A. THAYER OF SPARTA—NOTES ON SMALL FRUITS.

Variety.	Hardiness.	Ripening.	Quality.	Size.	Productiveness.	Growth.
			Raspberries.			
Ada	Hardy	Late	Firm	Medium.	Fairly prolific.	Vigorous.
Am. Everbearing	Hardy	Medium	Firm	Large	Fairly prolific.	Vigorous.
Palmer	Hardy	Early	Firm	Medium.	Fairly prolific.	Very vig.
Progress	Hardy	Early	Good	Medium.	Fairly prolific.	Vigorous.
Winona	Hardy	Early	Fair	Medium.	Fairly prolific.	Very vig.
			Strawberries.			
Crawford	Fl. Perfect	Late	Good	Large	Fairly prolific.	Fairly vig.
Eureka	Fl. Imp	Late	Fair	Large	Fairly prolific.	Very vig.
Gt. Pacific	Fl. Imp	Medium	Good	Large	Very prolific	Very vig.
Michel's Early	Fl. Per	Very Ear.	Fair	Medium.	Very prolific	Vigorous.
Sandoval	Fl. Per	Medium	Good	Large	Fairly prolific.	Fairly vig.
Thompson's No. 5.	Fl. Per	Early	Good	Medium.	Quite prolific	Very vig.
Thompson's No. 8.	Fl. Imp	Early	Very G'd	Medium.	Very prolific	Very vig.
Thompson's No. 9.	Fl. Per	Very Ear.	Good	Medium.	Very prolific	Very vig.
Thompson's No. 26	Fl. Imp	Early	Very G'd	Medium.	Very prolific	Very vig.
Thompson's No. 26	Fl. Imp	Medium	Good	Medium.	Very prolific	Very vig.
Viola	Fl. Per	Late	Fair	Large	Fairly prolific.	Not vig.
Tippecanoe	Fl. Imp	Medium	Fair	Large	Very prolific	Fairly vig.
Yale	Fl. Imp	Late	Fair	Large	Fairly prolific.	Fairly vig.

Japan Wineberry not hardy, vigorous grower, small fruit, not productive.

FROM FRED A. HARDIN, WEYAUWEGA—NOTES ON SMALL FRUITS.

The data given as to size, quality and firmness of fruit and to the vigor and productiveness of the plants are based upon careful examinations.

Strawberries.

	Perfect or imperfect flowers.	Date of bloom.	Date of first picking.	Date of last picking.	Size of fruit scale 0 to 10.	Quality scale 0 to 10.	Firmness scale 0 to 10.	Vigor scale 0 to 10.	Productiveness scale 0 to 10.
Crawford...	Perfect ...	May 18.	June 12.	July 3.	9	8	Firm....	6	5
Eureka...	Imperfect.	May 19.	June 21.	July 9.	8	7	Firm...	9	8
Great Pacific.......	Imperfect.	May 14.	June 9.	July 9.	7½	8	Firm....	10	9
Thompson's No. 5..	Perfect ..	May 13.	June 11.	June 30.	6	4	Firm....	5	8
Thompson's No. 7..	Imperfect.	May 15.	June 11.	July 2.	8	9	Firm....	9	10
Thompson's No. 8..	Imperfect.	May 13.	June 10.	June 30.	6	5	Medium.	6	4
Thompson's No. 9..	Perfect ...	May 12.	June 6.	June 28.	7	7	Medium.	8	7
Thompson's No. 11.	Imperfect.	May 11.	June 9.	July 1.	3	4	Medium.	4	3
Tippecanoe.........	Perfect ...	May 20.	June 15.	July 30.	8½	5	Medium.	3	7
Warfield No. 1......	Perfect ...	May 14.	June 12.	July 3.	7½	7	Firm....	5	5
Viola..............	Perfect ...	May 19.	June 8.	July 10.	8	8	Firm....	10	10
Yale.....	Perfect ...	May 19.	June 20.	July 10.	7½	6	Firm.. .	8	6

Raspberries.

	First picking.	Last picking.	Color.	Size.	Productiveness.
Ada..............................	July 11....	Aug. 31...	Black....	9	8
Am. Everbearing.......	July 6...	Aug. 30...	Black.....	10	8
Muskingum....	July 2...	Aug. 30...	Red.......	8	8
Palmer...........................	June 30...	July 25...	Black.....	9	10
Progress.........................	June 30...	July 22...	Black.....	5	4
Winona..	July 5...	Aug. 25...	Black.....	8	4
Blackberries.					
Thompson's E'y Mammoth........	July 26...	Aug. 20...	Black.. ..	7	2
Japan Wineberry......	Aug. 26...	Sept. 10...	Light red.	2	1

The spring of 1891 was a remarkably dry one at Weyauwega, not enough rain having fallen from April 14 to June 16 (63 days) to wet the soil to the depth of one-fourth of an inch.

Of the strawberries, Thompson's No. 7 was rated first in quality and productiveness; fruit about the size of Wilson, color very dark when fully ripe. The Palmer was considered the finest raspberry.

MR. PEFFER'S SEEDLING APPLES.

By E. S. GOFF, Experiment Station, Madison, Wis.

Among the many who have contributed to the success of apple culture in Wisconsin by growing seedlings, I have not made the acquaintance of one whose efforts in this direction have been so systematic, so extensive and so long continued as have those of Mr. Geo. P. Peffer, of Pewaukee. A few weeks since I visited this gentleman in order to gather what information I could from his experience in apple culture, and was surprised to learn of the great number of seedlings which he has grown. Many of these were planted with the sole idea of securing new varieties that should be improvements upon those known to him at the time. A considerable number of them are of known parentage, and some are the result of artificial crossing.

Mr. Peffer's first attempts at growing apple seedlings were made upon his village lot, while he was quite a young man and was engaged in following his trade as carpenter and joiner. One of these early plantings was rewarded by the production of the Pewaukee apple, which has now an established reputation throughout the Northern States. The original tree of this variety, which I would gladly have seen, has succumbed to time, and has recently been grubbed out. Mr. Peffer's neighbors, who had discovered his success in apple culture, urged him to exhibit his fruit at their county fair, and after some hesitation he consented to do so. To his surprise, he was awarded with premiums, and this, as he informed me, was one of the incentives that induced him to abandon his trade and give his whole attention to fruit culture. He came into possession of a larger place outside of the village, where he began, wisely as it seems to me, not by ordering a standard list from an eastern nursery, but by propagating the seedlings that had proved successful in his village lot. He also continued the growing of seedlings, and I had the pleasure of walking with him over a large orchard planted at this time (about 1860), of which the remaining trees now show many marks of age. In this seedling orchard are several trees that bear apples of good quality, and a few are excellent. Several of them have been named and propagated to some extent. Had Mr. Peffer been ambitious of a reputation for novelties, others would doubtless have found their way into the catalogues.

But this orchard was not the extent of Mr. Peffer's seedling growing. From it he conducted me to another field, ten acres in extent, which was largely occupied with seedling apple trees, thickly planted. This orchard dates from 1874, and as the trees in it stand very close together, they have not attained much size, and many of them are just coming into bearing. Here and there may be seen a tree with a mark cut in its trunk, indicating that it has shown some valuable quality. In this orchard one might select many varieties that are fully up to the average of nursery sorts in quality, while a few could be rated number one. As is to be expected the majority have no special value.

Mr. Peffer has interested himself both in the science and art of fruit growing, and can converse intelligently with the botanist as well as the most intensely practical apple culturist. He called my attention to several interesting points in vegetable physiology. Among these was a seedling tree that had been top grafted with Pewaukee apples. During one of the phenomenal winters of a few years ago, the seedling stock was too tender to endure the severe freezing, and the bark on its trunk became loosened from the wood all around the tree. The Pewaukee top, however, appeared to possess vitality enough, aided by the moisture which was still supplied by the ruined trunk, to form a tongue of new sap wood clear to the ground, beneath the loosened bark, on one side of the tree. On the opposite side a similar tongue progressed about half way to the ground, and then ceased growth. The tongue that reached to the roots supplied the top with sufficient sap to maintain the foliage and produce a small crop of fruit through the season, and then gave up the struggle for existence.

He also called my attention to a seedling tree, that though of the greatest vigor, had never borne a fruit, and never exhibited a sign of blight. In order to utilize this unprofitable tree, he top-grafted upon it fourteen varieties of Russian apples, several of which proved subject to blight. Whenever one of the scions blighted the disease had followed down the branch in which the scion had been inserted, killing this branch as far as the first large limb. When two varieties had been inserted into the same branch, only one of which blighted, the disease only reached down to the junction of the branch bearing the healthy scion, indicating that to a certain extent, at least, the disease is transmissible from a scion of a variety subject to blight to a stock that, under ordinary circumstances, is not subject to it.

Mr. Peffer showed me what appears to be a hybrid between the Siberian crab (*Pyrus prunifolia*) and the native crab, (*P. coronaria*). It was secured by pollenizing the former with the latter, and the fruit showed something of the peculiar harsh acid of the native crab and many of the seed cases were without kernels — evidences of a hybrid origin.

Mr. Peffer has also grown several seedling pears of merit. He feels confident that we can grow the pear in Wisconsin, provided varieties can be found that are not subject to the blight. Besides the Pewaukee apple, the Clark's Orange, Peffer's No. 1, Peffer's No. 20, the Gibb crab, and perhaps some others among Mr. Peffer's seedlings possess qualities that are likely to render them permanent and valuable additions to the list of hardy apples. Whether or not Mr. Peffer's experience in seedling growing has proved financially profitable, he is reaping a comfortable reward in the consciousness of having made a valuable contribution to the horticulture of the Northwest.

FRUIT DISTRICTS GEOLOGICALLY AND CLIMATICALLY CONSIDERED.

[Read before the American Pomological Society, at Washington, by Prof. E. S. Goff, of the University of Wisconsin.]

The proposition that certain regions are specially adapted to the production of certain fruits requires no proof. The Ionian grape, which bears the little seedless fruit, known in commerce as "Zante currants," is scarcely grown, except in two or three of the Ionian islands, and in a narrow territory of the northern shores of Morea, and almost all efforts to naturalize it elsewhere have failed. Oranges are produced over a considerable part of Florida, but the orchards in the vicinity of Indian river have healthier trees, and yield finer fruit than those of most other districts. The Catawba grape is grown more or less in gardens throughout the Northern States, but only in a few favored districts, as on the shores of Keuka lake and of Lake Erie and the lower valleys of the Hudson river, does it ripen its fruit perfectly in the average season. In like manner the peach tree endures the winter over the greater portion of the Northern States, but only in a few regions of these states, as upon the eastern shores of Lake Michigan, and in parts of New Jersey and Delaware, is it reliable for fruiting. Illustrations might be multiplied were it necessary.

Sometimes these fruit regions are circumscribed by very narrow limits. On a certain farm known to the writer, in southern New York, the growing of peaches has proved highly profitable to its owner for many years, while nowhere else in the vicinity has the production of this fruit proved even moderately successful. In parts of Richland county, Wis., in which the surface is broken by gentle hills, separated by narrow valleys, certain fields on a given farm that crown the hillocks, are adapted to the culture of hardy apples, while others often on the same farm, which extend down the south slopes or form the bottom of the narrow valleys, offer such different conditions that apple trees are not only unproductive, but rarely live more than a few years. A knowledge of these fruit districts, and of the conditions that locate and limit them, is of the greatest importance to one who contemplates entering upon any department of fruit growing as a vocation, because however great the expenditure of capital, energy or skill, the highest success in this industry cannot be hoped for in a location where natural conditions are unfavorable. A brief consideration of this subject is therefore appropriate.

Fruits, in common with all other plants, prosper in proportion to the favorableness of their environment. A study of plant environment reveals the fact that it is the resultant of a complicated set of conditions that act upon each other in varying degrees. Thus temperature, a very important factor in the plant environment, is modified not only by latitude, but by exposure, by altitude, by the nature of the soil, the proximity to water, the prevailing winds, the humidity of the air, etc. In like manner, atmospheric humidity and precipitation are modified by many physical conditions. It follows, therefore, that climate is not necessarily coincident with latitude, as any isothermal map will indicate. But no isothermal map yet constructed shows this truth in its entirety, because in almost every individual township, we find the climate varying more or less as a consequence of varying physical conditions. Were all soils and climates equally well adapted to fruits, or were all fruits equally adapted to different soils and climates, we should have one continuous fruit district wherever land extends. But since the adaptability of fruits is as different as soils are far from uniform, and since climate varies greatly in different regions, it results that fruits, in common with all plants, succeed very unequally in different localities. Within the tropics, where solar heat is not wanting, we find a continuous fruit belt through all fertile lands that have sufficient rainfall, and of which the altitude is not so great as to neutralize the solar heat. But even here, I am informed that certain esteemed varieties are successful only in narrowly circumscribed districts. As we proceed northward, and warmth diminishes, this fruit belt gradually breaks up into isolated patches of greater or less extent.

These patches, or as we prefer to call them, fruit districts, are found in localities, where, for any reasons, the climate retains the qualities of localities less remote from the equator, provided only that the soil and rainfall are propitious. This breaking up of the great equatorial fruit belt first occurs with the strictly tropical fruits, as the pineapple, cocoanut, mango and banana. These, with the possible exception of the banana, can scarcely be grown on a profitable commercial scale within the limits of the United States except in isolated districts in the extreme south. The orange belt breaks up a little farther to the northward, this fruit being grown with some success in favored locations along the Gulf and Atlantic states from the Rio Grande to the sea islands of South Carolina, and in the thermal belts skirting the coast valleys of central and northern California. [Van Deman, Tropical and Semi-tropical Fruits of the United States, 1887; 57; Klee, Ib., III.] The breaking up of the peach and grape belt occurs still farther to the northward, so that we find the culture of these fruits successful in specially favored districts in some of our more northern states. The apple belt may be said to include nearly our entire country, breaking up only in the more northern portions of the Mississippi and St. Lawrence valleys, while for the *Prunus Americana*, the currant, gooseberry, blueberry and the raspberry, the belt of successful culture passes our extreme northern limits, the latter fruits being found in their wild state as far north as Alaska. [Dall, Rep. Dep't. Agr., 1868, 178.]

It should be added that some of our hardy fruits, as the apple, currant and gooseberry, do not succeed in tropical countries. We have therefore for those fruits a belt running through the temperate zones, breaking up into isolated districts both on the northern and southern edges, these districts on the sides towards the equator being located and limited by a set of conditions acting exactly the reverse of those on the side toward the poles.

It is a fact of interest and importance to horticulture, that other things equal, the more remote from the equator a fruit district is located, the more profitable is the culture of the fruits to which it is adapted. The reasons for this are various. Competition from the same latitude is not only restricted, but the cost of transportation enhances the value of the same fruits grown further south. In the more delicate fruits, as the raspberry, blackberry and strawberry, the lateness of maturing in the more northern fruit districts effectually shuts out southern competition. In some other fruits as the apple, the longer days of the more northern clime develops a brilliancy of color that is not found in regions further south. In Wisconsin, successful apple culture is limited to a comparatively few districts, and these are mostly of small extent, yet the profits realized from the few successful orchards often surpass those from the finest orchards of western New York. The high color of the apples grown in Wisconsin and other northern states is recognized wherever they are shown with those of the same varieties grown further south. In like manner the profits of small fruits in the more northern states are often if not usually greater than those realized from localities further south, where their culture is more generally successful. The same may be said of the peach and the grape in our more northern fruit districts. These facts give an added interest to these northern fruit regions, and invite a study of the causes which serve to locate and circumscribe them.

Within a few years the eastern shores of Lake Michigan, particularly in the portion south of Grand Haven, have become famous for the production of peaches. On the western shore of the same lake the peach tree scarcely survives the winter, and rarely yields fruit, while a few miles further to the westward the peach tree cannot survive, and only the more hardy varieties of the apple can be successfully fruited. On the east shore of the lake, however, apples and even peaches are said to succeed as far north as Mackinac, [Lyon, Hist. Mich. Hort. 12.] which is a degree north of the northern boundary of New York and Vermont.

The causes for these striking differences of climate in a similar latitude, according to Professor Winchell "must be attributed to the fact that the prevailing winds which bring frost or severe cold are westerly, reaching the easterly or Michigan shore only after having traversed nearly or quite one hundred miles of very deep open water, to which, during the warm season, they will have surrendered a very considerable increment of heat, to be retained until it shall be wrestled for and re-absorbed by the colder gales of late autumn and winter, thus quenching their excess of cold by the transfer to them of a portion of the surplus heat of the warm season. It is also a fact well known to nautical men, that a current sets northward along the easterly shore of Lake Michigan, doubtles occasioned by the increased influence of prevalent southwesterly winds upon the waters nearest that shore; and also that there is a reverse current along the westerly shore, thus causing a slow, but constant transfer of the warmer waters of the south toward the northerly extremity of the lake and vice versa, much in the same manner as we see on a far grander scale the tepid waters of the Gulf of Mexico transmitted by the gulf stream to soften the climate of Northwestern Europe." [Winchell, quoted by Lyon, l. c. 9, 10.]

In like manner the southern and eastern shores of Lake Erie and the eastern shore of Lake Champlain present a somewhat softened climate as compared with localities more remote from water, making the former district well adapted to the culture of native grapes, and the latter to that of hardy apples. Even the smaller lakes of central New York, aided doubtless by the larger Lake Ontario to the north are surrounded by fruit districts in which varieties of the grape and peach succeed that cannot be grown in northern Pennsylvania. Especially is this true of Keüka lake, on the banks of which frosts hold off until the middle of October, and the Catawba grape ripens to perfection in the average season.

The influence of physical features in modifying climate is perhaps nowhere more strikingly shown than in California. Here, the combined influence of the great Pacific ocean, with its Japan current washing the coast with waters tempered by a tropical sun, and the mountain barriers to the eastward, deflecting the northerly winds actually cause the isothermal lines, which normally run east and west, to extend north and southward. Indeed, in some cases, fruits ripen earlier in the northern than in the southern parts of the state. [Wickson, California Fruits, 10, 11, 13.] The influence of altitude in modifying climate is also admirably illustrated in the mountain regions of California. In the valleys, semi-tropical fruits are successfully grown even as far north as Shasta county. But above an elevation of 2,000 feet conditions gradually intrude which resemble those of colder climates. The apricot and peach are liable to winter injury, and give irregular returns. At 4,000 to 4,500 feet, the hardy apple and pear flourish, ripening late, and winter varieties possess excellent keeping qualities. Here, however, winter killing of trees begins, and locations even for hardy fruits have to be chosen with circumspection. [Ibid, 15, 17.]

At certain altitudes in mountain districts in California and elsewhere, occur belts of greater or less extent that are singularly free from spring and autumn frosts. These localities have been called "thermal belts," and are peculiarly adopted to fruit culture. Their altitude secures free circulation of air, and immunity from violent summer heat, which makes them less subject to many fungus diseases than the valleys beneath, while their almost complete freedom from frosts gives them a prolonged growing season. In seasons when premature warm weather in spring is followed by severe frosts, these thermal belts are sometimes conspicuous along the mountain sides from the lively green of their newly formed foliage, while both above and below the prėmature growth has been blasted by frost. The presence of these belts has been explained [M'Dowell Rep. Department of Agriculture 1861, 146], by the merging of the ascending current of warm air from the valleys beneath with the more rarified atmosphere of the mountains. The warmer currents ascend until they reach strata of equal rarification with themselves, where they cease to rise, and merge themselves in the existing atmosphėre.

It would seem that the great mountain regions of our Western States and Territories must abound in these thermal belts, though comparatively few of them have as yet been developed for fruit culture. It is not impossible that this vast mountain system may yet yield richer stores of wealth from its fruits than it has yielded from its mines and placers.

Certain fruits are especially susceptible to certain features of environment. The cranberry, it is said, cannot endure a soil that contains any considerable admixture of clay or lime. The European wine grape, *Vitis vinifera*, is very susceptible to extremes of atmospheric humidity; the fruit buds of the peach are very susceptible to the cold of winter. The area of successful culture for such fruits is greatly restricted as compared with what it might be, but for these special weaknesses. The cranberry, though hardy enough to endure the climate of Alaska, succeeds in very few localities of the Northern States, not apparently from any unfavorableness of climate, but from its susceptibility to soil conditions. The climate of the Mississippi Valley possesses the requisite amount of summer heat and rainfall for the complete maturation of the European grape, yet all attempts at its culture there have proved unsuccessful. The reasons ascribed for this failure are our violent extremes of meteorological conditions, especially of atmospheric humidity [Lippincott, Rep. Department of Agriculture, 1863, 487], though it is probable that the Phylloxera should be charged with one of the chief causes. In portions of the Rio Grande Valley, and in Southern California, this grape is being successfully grown under irrigation, which appears to defeat in a measure the work of this destructive insect.

I may add, in conclusion, that the subject of plant adaptation is one of great interest and importance, and which should receive much more study than has yet been devoted to it. It would seem that a thorough study of plant environment in our distinctive fruit regions should enable us to establish a formula by which the adaptability of any given locality for any particular fruit might be determined without resorting to the costly method of experiment. What expense and disappointment might have been saved could it have been determined beforehand that the European grape could not succeed in the eastern United States! De Candolle, who gave much study to the geography of plants, was unable to explain this failure from any data that he could procure. [l. c. 437.] Could he have had access to more complete meteorologicol data, it is probable that he might have assigned the true cause. This, indeed is the crying need. I have made some attempt at these studies, but have been disappointed at the meagreness of the available data. It is true that the reports of the signal service have very great value, but before the science of plant adaptation can be fully developed, we must have series of observations reaching through years, not only of temperature, humidity, precipitation, cloudiness and wind, but of the intensity of sunshine, of soil temperatures and soil moistures, of the prevalence of fogs and dews; and we must have these observations not simply from one or two localities in a state, but from every locality that has an especially interesting economic flora. Let those who are patiently making laborious observations at our signal service and experiment stations, and who often grow weary of their well-doing, wondering if their patient labor will ever be appreciated, take new courage. It is from data of this kind that a new science is yet to be developed that will prove of vast importance to future generations.

CHRYSANTHEMUM CULTURE.

W. ARTHUR ELLIOT, Baraboo.

The Chrysanthermum stands next to the rose in popularity and is justly called the autumn queen. Coming into bloom at a time when most plants are being killed by the frost of autumn, its beauty is fully appreciated; being easy of culture it is a flower for the amateur and as such is rapidly coming into favor. There are scores of different shaped flowers from the small button shaped pompons to the large Chinese and Japanese types; some incurved, others outcurved, varying in size from ½ inch twelve inches in diameter, and in color from white to pink, yellow to bronze and pink to scarlet.

A few years ago the chrysanthemum was but little known and chrysanthemum shows were unheard of except on rare occasions. Through a system of cross fertilization new varieties have been developed which with high cultivation has brought them to such perfection that they have justly found favor and it is a small town indeed which does not hold chrysanthemum shows in the fall.

Each year new varieties are coming to the front which are not only more beautiful than the older kinds but have other strong points to recommend them, such as large, healthy foliage and strong, systematic growth. These new varieties have a tendency to crowd out the older ones; we are a progressive people and we want the best.

The mode of cultivation generally adopted by amateurs and professionals will give, with a reasonably good season, splendid results.

Procure strong healthy plants in March and April, from a reliable florist, free from disease and not too large; my choice would be a plant in a two inch pot about two or three inches high. As soon as you receive them plant in four inch pots, using good loam of a sandy nature, firm the soil down well around the roots. As soon as all danger from frost is past make a bed of good rich soil, using a liberal supply of good barn-yard manure, well rotted; plant the chrysanthemums about three feet apart each way packing the soil firmly around the roots. When the plants are about four inches tall pinch out the terminal bud, the plant will then branch, cut off all but the three best shoots; when these are three or four inches long pinch the same as before, keeping up the pinching process until September 1st, when they should be allowed to grow at will.

Keep the plants well staked up, using two or three stakes if necessary. As soon as the buds are set commence the disbudding process, a good rule to follow is, do not leave the buds nearer than four inches. About September 15th, lift the plants and pot in from six to ten inch pots, as the size of the plants require, using good rich soil. Firm the soil well down in the pots, remove to the conservatory taking care that they do not wilt; water with manure water once a week. After the plants are through blooming remove to the cellar until Feb. 1st when they must be brought up and started into growth. As soon as you have good shoots two inches long cut them off and put them in sharp sand, keeping them in a temperature of as near 60° as possible; as soon as rooted pot in two inch pots and treat as previously directed.

Standard or tree chrysanthemums are allowed to grow from fifteen to twenty inches high before pinching back, using a stout stake to support them; all the branches are kept cut off the main stem and a bushy head kept growing at the top forming a nice tree-like plant. Single stalks and single bloom plants are grown by keeping all branches and eyes rubbed off only letting one straight stalk grow; pick off buds except the top ones.

CULTURAL NOTES — Keep the plants growing vigorously from early spring until late in the fall. Be sure the soil is well firmed around the roots. Never let them get dry or wilt for want of water.

Use plenty of cow manure, well rotted, in the soil.

Never grow more plants than you can care for.

Always grow the best kinds you can procure.

Never let the plants get pot bound, they need root room.

"Many prominent horticulturists have devoted their whole lives to the improvement of this Queen of Autumn in this country as well as in Europe, without speaking of its native home, Japan, where it is most carefully cultivated and esteemed as a national flower and a Japanese emblem.

"The history of chrysanthemums dates back for many years, and last year the centennial anniversary of its introduction into Europe was celebrated, but long before that time it was cultivated in Japan.

"Our country has started late, but has made up for the time lost, and at present the most valuable and esteemed varieties grown are American kinds.

"A new variety should never be finally judged the first year, but must be grown at least two seasons before it is well tested. Some of the most promising varieties have proven total failures the second year, while, on the other hand, many that have been condemned the first year have proven valuable when tried another season."— Extracts from a paper on Chrysanthemums, by W. A. Manda, Short Hills, N. J.

"MUM'S THE WORD.

"The Japanese call the chrysanthemum the 'queen of flowers,' as we call it the 'queen of autumn.' It was once called the golden flower, but that is hardly appropriate for a plant with such varied colors, although the botanic word chrysanthemum is from the Greek, meaning gold flower. In olden times it was also called artemesia, now seldom heard. Its long name of chrysanthemum is such a mouthful that the trade with this, as with pinks for carnations, 'vallies' for lily of the valley, and so forth, has tried sundry short words. Shirley Hibbard, in his droll way, called the votaries of the flower 'the glorious company of mummers,' and next year came out with a play on the idiom of mum and mumchancing. Here is a bit: 'The rose is an emblem of silence, and words spoken 'under the rose' are not to be repeated. Henceforth when the rose goes out of flower and the babblers are looking for a new age of clack we will bring forward the chrysanthemum and cry 'mum.''

"They are sometimes called 'chrissies,' the French going one better and calling the flower Madame Chrysantheme. A writer in the *American Florist* suggests chrysanthal etymon. Thus the appellation 'chrysanthemum' was applied by the Greeks to some families of plants whose flowers presented a cross-way arrangement of the florets centuries before the symbolism of the cross had arisen. The way is to shorten the word to 'chrysanth' (accented on the first syllable), the cultivator a chrysanthist and the structure devoted to growing it a 'chrysanthry.' "— Edgar Sanders, Chicago.

THE CULTURE OF FLOWERS AMONG THE CHILDREN.

BY MISS MAMIE MYERS, Baraboo.

The culture of flowers has received more or less attention ever since the earliest time of civilization. Among the ancient Romans, small gardens filled with roses, violets, and other sweet scented flowers were largely cultivated; and flowers which we now prize, were grown by the ancient Greeks. But the horticultural art declined with the downfall of Rome, and did not revive for many years afterward. In England, pleasure gardens, fountains and shady walks were known from the time of the Spanish Armada. Horticulture, however, made little progress until conservatories for the tender plants were established. It is now extending quite rapidly over the world through the faithful endeavors of the young people.

We seldom find a grown person who does not like flowers, and where is the child that is not overjoyed at the thought of his spending a few hours in the fresh, green woods, among the lovely spring blossoms? How well the children love to pick the delicate little blossoms and carry them home to their mothers. Now if the little ones were taught by their parents or older brothers or sisters how to make these flowers thrive at their own homes, how pleased they might be.

There are few people in our city, who have not a small piece of ground which is not used during the spring or summer. Now, with very little trouble and expense, this might be converted into a flower garden for the children. Let some of the older ones plan and direct the work, but let the little ones do it. They always enjoy digging and playing in the dirt, and if they dig to some purpose, how much more they enjoy it. So by getting a few simple implements such as a hoe, a rake and a trowel, the younger ones may be set at work.

There are the wild flowers to begin with. By surrounding them with their natural conditions, nearly all may be easily made to grow in the garden. And such flowers as the hepaticas, violets, blood-roots, spring beauties, shooting-stars, and polemoniums, known to the children as blue bells, soon form a lovely spot. By taking them up in the spring, with plenty of soil about the roots and then setting the plants out and keeping them moist, they will thrive without trouble.

Then there are the ferns. By gathering the ripe spores and planting them in a cool, shady place, a beautiful clump of ferns will in time be the reward of your labors. Or, let the children erect a little rockery, placing dirt between the rocks and also plenty of it on top. Let this be erected in a suitable place and then sow the spores in the earth on top of the rockery. Then some day a handsome fernery will be the result.

Among the tame flowers which are pretty for gardens and which are not at all costly, are the forget-me-nots, lilies of the valley, pansies, verbenas, pinks, nasturtiums, sweet peas and poppies. By getting a few packages of seed and teaching the children how to sow it and how to care for it after it is sown, they are given employment and the flowers beautify the homes. How happy the little ones are when, after patient waiting and watching, they discover the first little green leaves that peep above the ground. And how eagerly they watch the growth of the tiny plantlets until their development into good sized plants.

Then comes the weeding which must be done. This is a very trying process for the little beginner for he cannot yet distinguish between weeds and plantlets. But if a little care is taken with him, and he is taught the difference between the seed leaves of the flowers and those of the weeds, the little gardener will soon learn what to pull up and what to leave.

Another thing which the children can do that adds a great deal to the appearance of the lawn, is to arrange a lily tub. This may be done by placing some dirt in the bottom of a tub, scattering a few lily seeds in it, and then fill the tub and keep it supplied with water. If properly tended, the seeds will sprout, grow, and finally produce the snowy white blossoms of which every one is so fond. Or, if one lives near a creek or a pond, drop the seeds into it.

I have a friend who lives but a few rods from the edge of a mill pond. A few years ago her father obtained some Lotus lily seed. He scattered them in the pond in front of his home, and now every summer the surface of the pond is covered, for a short distance, with large, beautiful flowers, most of them measuring from eight to ten inches in diameter.

Where garden room is scarce, window-gardens may be constructed. These consist of shallow boxes lined with zinc and fastened on the outside of the house in front of the windows. In these, is first placed a layer of charcoal, then they are filled up with soil and flowers planted in them. Ivies or vines placed around the edges with delicate flowers in the center, give one of these little gardens a very handsome appearance. Such gardens are frequently seen in the large cities where there is no ground in which to plant flowers.

People, who have lawns, usually take a great deal of pains in keeping them in good order. Now, children enjoy running a lawn mower; so in purchasing a lawn mower, why not select one that runs easily and then let the children help care for the lawn?

Right here, I think you will pardon me for straying a moment from my subject. As you probably all know, some birds are attracted by flowers. So let the little ones procure a long, shallow pan, fill it with water, and then place it on the lawn for the birds to bathe in. I think it will not be long before they find that their kindness is appreciated.

To return to the subject, there are the trees and shrubs which may be easily cared for. There is a beautiful English custom which I think would be very nice for everyone to follow. This is the planting of an acorn on the birthday of a child, and some day a large beautiful tree will stand as a pleasant memorial of that day. If any one prefers the seed of any other tree may be planted. We find very few places in which there are too many trees, and it seems to me that this would be a nice way in which to add to the loveliness of our homes.

When Arbor day arrives, let the children plant a maple or an elm tree somewhere about the yard. If there is no room on the lawn let them plant the tree by the road side and I am sure, many weary travelers during the hot summer weather, will be grateful to them for planting the trees that afford the ever welcome shade.

Perhaps there is an old stump or a dead tree in the yard. If there is, instead of removing it, show the children how to train vines over it, and in a short time it will be an object of beauty.

When winter comes there is one disadvantage under which some are obliged to labor, and this is a cold house. But there are a great many hardy plants that seem to have been created especially for those who have not the conveniences for caring for the tender plants. There are the bulbs. They are not expensive and are easily cared for. So when fall arrives obtain a few bulbs such as those of the hyacinth, the narcissus, and lily of the valley. Then let the children set them out and place them in the cellar. After about six weeks let the little ones bring them up and place them where the light will reach them. When the green leaves spring up, and soon after a large bunch of buds, how impatiently the little florists wait for the sweet, lovely flowers which soon appear.

Among the regular house plants which endure a good deal of cold, are the geraniums, primroses, oleanders, and the hibiscus.

Then, the window gardens may be transferred from the outside to the inside of the windows, and in this way green gardens will thrive all winter.

From the cultivation of flowers, children derive numerous benefits. In observing the growth of plantlets, much plant knowledge is acquired. They learn to distinguish seedlings by their seed leaves, thus learning an important lesson in Botany. A close companionship with flowers, develops a sense of the beautiful. The delicate blossoms exert a refining influence on the character. In caring for the flowers, orderly and systematic habits are developed. The minds and hands being occupied, the children are kept out of mischief. Being thus engaged in healthful employment is much better than playing in the street with rude, rough companions.

Besides the benefit to the children, physically, mentally and morally, the the benefit to horticulture, itself, is not to be undervalued. Horticulture is not as extended as it should be, and the tastes formed for it in childhood may lead a larger number to pursue this work.

AMPELOPSIS VEITCHII.

BY C. E. TAINTER, Madison.

In regard to the hardiness of the various ivies, so far as we know, the authorities do not claim to trace the origin of any of them to a tropical climate as the case with many of our scandent cucurbitaceæ. It has been fairly shown that freezing does not destroy ampelopsis veitchii or royalii. The following extracts may show much loss in places with mild temperature and rich soil. Perhaps a moist subsoil was too far away or was entirely deficient. In such cases it may be well to adopt the theory of

John A. Bowden, of North River, that "the food of all the vegetable kingdom is not water but moist air" and that we ought to learn from failure as well as from success.

Arbor day has come to eastern colleges too near the Fourth of July, when the ivies, which are early to start had performed their deep spring work and did not return to it that season. Planted by the kiln dry wall perhaps near a winter furnace and bad subsoil they declined to make a spread that season. The janitor went his way that vacation to the sea shore or mountain and in autumn the dry lawn wanted more moist air than could well be found.

The sand lawns of our country are not the most favorable places for climbing vines,— but water well sprinkled on lawn grass in summer, autumn and even early winter, though many yards away, will add largely to the vigor of the foliage and vividness of their color. This suggests moist air at the roots all the year; especially in autumn and winter in order that the woody parts may ripen in proper time, and not catch a dry freeze nor become sunburnt. Thus we may by careful treatment of soil become able to obviate the effects of a dry climate, and secure vigorous growth of any and all hardy ivies as is the case on the Atlantic coast.

Robert Manning and W. H. Spooner, of the Massachusetts Horticultural society, say the vigor of ampelopsis veitchii may have been diminished by excessive propagation, and may be renewed by allowing the vine to trail on the ground, as is the custom with English ivy. It will root well and make natural layers the whole length. If left that way for a few years the vigor of each layer and the main vine will be greatly increased.

The following extracts go to show that we need more knowledge, better system and more careful treatment of ampelopsis while young. Cyclopedias contain very little and the literature concerning it is very scattered and unsatisfactory. We will thank any one for historical and local facts concerning it in order that an index may be prepared for use by the horticultural department of the world's fair.

Prof. T. J. Burrill, of the state university at Champlain, Ill., says, "large plants have twice been killed on their building, north side, also on the green house, north side, but at Lafayette, Ind., a large vine on a west wall has done well for four or five years. It may succeed in Chicago. The Virginia creeper is by far the most satisfactory perennial we have for a climbing vine."

Mr. J. C. Plumb, of Milton, Wis., says, "ampelopsis veitchiiis not hardy enough with us for an ornamental climber, but it may do better on the north side if the soil is not too rich. The best success which I have seen is on the stone church at Geneva Lake, Wis."

Prof. S. B. Green, of St. Anthony's Park, Minnesota, says: "The ampelopsis veitchii vines set in our nursery for experiments were lost, but I think in our case it was due to neglect during a severe drought before they were well established. I have found it a plant that needed considerable care until well started. I agree with you as to having the roots in moist soil in winter. The best success in this vicinity was where plants were set in retentive soil and have made favorable growth after being out two winters."

Geo. G. Atwood, of Geneva, N. Y., says "climbing vines often come to grief when planted near a deep dry cellar wall, and the danger is of freezing dry. It is a fact not to be overlooked that Ampelopsis Veitchii is a tender plant while young. It should not be exposed to a burning sun while the roots are frozen. The woody construction of both root and stem while young are as minute as a hair. Its fibrous roots are too small for the human eye."

H. W. Buckbee, Rockford, Ill., says: "It is our finest hardy climber. It clings by rootlets thrown out from the stem. Its leaves are ranged as evenly as tiles on a roof."

Thos. W. Elder, landscape gardener, Philadelphia, says of the two varieties that came first at the centennial at Philadelphia the royalii with green twigs was the most vigorous and hardy. He gives them both credit for being superior self climbers.

W. C. Strong, of Wabon, Mass., has witnessed the cultivation of several strains or varieties of Ampelopsis Veitchii for many years around Boston, and says it is called Boston Ivy because it has been so much used to decorate both old and new buildings, stone walls and fences in parks and cemeteries. The new variety called Englemonni is the most promising for vigor and hardiness.

Prof. S. T. Maynard, of Amherst college, says "there is nothing in this section more valuable for covering closely stone work of any kind."

Prof. Goff, of the Madison Experiment Station, is beginning to propagate Mr. Strong's variety somewhat on the Boston plan.

Currie Bros., of Milwaukee, among the foremost seedsmen and florists of the Northwest, say: "We have watched the growth of Ampelopsis Veitchii in various sections for the last six years, and we find that it is as hardy in Wisconsin as any of our so-called hardy shrubs. Like all plant life, it is subject to many contingencies of our severe winters. Many of the hardiest of plants died last winter, while those that are considered only semi-hardy suffered very little; and the same happened in some of the eastern states. We visited a place near Boston a short time ago where a large quantity of Rhododendrons have grown and thrived for years, and while last winter was considered very mild, a great number of the plants were killed and suffered more or less.

A large quantity of Ampelopsis Veitchii are grown at Forest Home cemetery, Milwaukee. None of them were protected in any way last winter and not one of them died. We are inclined to think that the so-called root protection of this plant may have resulted in rotting the plants out, the last winter being so changeable."

Mr. Barry, the distinguished authority at Rochester, N. Y., says it is hardy with us and will do well in the northwest. It requires protection say the first, second, and third year, until well established. That it will become as hardy as an oak.

T. C. Maxwell, Geneva, N. Y., says: "We consider it entirely hardy with us. It is on many buildings and is growing in favor. Some on the North Presbyterian church must be fifty feet high. It covers many square yards. There are no signs of winter killing. After it gets well hold it covers very fast and needs neither support or cultivation of any kind."

H. W. S. Cleveland, landscape engineer, Twin City parks, Minneapolis, Minn., says: "I have a vine of Ampelopsis veitchii on my house, 385 Thirty eighth street, Minneopolis. three years old. Since we have adopted the Bostom system of cultivation in our parks, we find it is as hardy as any shrub or vine. Good samples may be seen at St. Paul on the house of the governor's father, at the top of a bleak hill and in hard soil. If we understand it the Boston system is to select vigorous plants, water well in the fall until the tap root and woody stem is firmly established. Perhaps these plants have been winter hardened out doors one or two winters."

Mr. and Mrs. H. N. Moulton. 811 Jenifer street, Madison, Wis., say: "We received two roots of Ampelopsis veitchii from my brother in Springfield, Mass., in the spring of 1886, they have now been out five winters,—are about twenty-two feet high and are trying to go higher than the house. They spread twelve feet or more wide and we have distributed many cuttings for our friends and ourselves. One of these planted on the southwest side in 1890 is now probably twelve feet high and six or eight feet wide. These are of the green twig variety called royalii. The roots by mail were five or eight inches long. The woody stem very small, certainly not larger than the ordinary stem of broom corn. We have since found the fibrous roots much smaller and have reason to suppose they are very numerous and long."

Mr. Simeon Mills, 222 Monona avenue, Madison, had a few cuttings for propogation and finds them quite satisfactory. On the west side of the agricultural hall on the university grounds at Madison may be seen an ivy vine which is more than ordinary. Prof. Goff, some time ago, ingeniously grafted a rapid growing and spreading species of ivy onto a very hardy root, and the result, we are told, is a marvel.

The two ivy vines on each side of main hall are scraggy affairs in themselves, but by grafting one in the other grand results might be obtained. Nothing is more ornamental on a college ground than an old building densely covered with ivy, and we should be interested in better species than we now have.

Prof. Goff, in the numerous papers on landscape ornamentation, read at different institutes and conventions during the past year, has shown that he has excellent original views on the subject, and we can well leave the improvement of our university grounds entirely in his hands.

The variety here in the northwest of hardy climbing vines is so limited it may be a pleasure to some to learn the best, and others may care to know what is in most common cultivation.

Conmon woodbine being native in the northwest has been familiar to early travelers and useful with later settlers, and its habits are pretty well known. The name *Virginia creeper* has followed it at home and abroad from the days of Pocahontas. Florists still enter it in their catalogues as *Ampelopsis Quinquefolia.*

This native woodbine is known at sight in summer from the poison ivy, by having five distinct leaflets on each leaf stem.

Two varieties are known, one with coiling tendrils and one, the more woody of the two, has none.

Professor Goff in charge of the Wisconsin Experiment station, University of Wisconsin, has succeeded in grafting these together in a way to make a more perfect climbing vine, in some degree like the distinguished self climber.

AMPELOPSIS VEITCHII, OR *A Tricuspidata.*

Ampelopsis Veitchii may be called Deciduous ivy. Its vigorous glossy leaves being fresh grown in summer resemble English ivy, as they are somewhat of the same size and shape and are considered equally beautiful in autumn by taking on brilliant copper and golden hues. These varying colors depend somewhat on the kind of soil and treatment of the plant.

What other hardy climber have we which will adhere to all surfaces either rough or smooth, of brick, stone, smooth marble, wood, painted or unpainted? It may for a time refuse fresh plaster if a better chance is at hand.

It has ways of its own quite different from tendril coiling and spiral working vines. It has peculiar foot like tendrils, which attach themselves to stone, etc., aud wood somewhat different from English ivy, which forms adhesive plaster and then takes roots in the paste. Where the surface is smoothest it readily adopts a method like a fly's foot and constructs a minute vacuum by gluing the edges of a leaf-like foot fast to the smooth surface and then strengthing the stem until stalk and twig are mature.

We wish information in regard to its history and habits in this or other countries.

In exchange for any such items, however small, we submit the following extracts lately given by the best authorieties known in the United States.

We will thank the friends of ornamental climbing vines to inform us what they have seen or heard of this modest self-supporting climber.

We expect to hear both sides.

"F. L. Harris, Wellesley, Mass., says Mr. Hunnewell imported two plants of Ampelopsis Veitchii in 1864 at a cost of ten and sixpence each. They were from the celebrated nurseries of James Veitch & Sons, Chelsea, near London.

"I propagated quite a stock from those two vines for Mr. Hunnewell, and when the lodge gate was built at Wellesley in 1866, several were planted there, and after the second year produced quite a sensation. The general public had never seen anything so thrifty and beautiful, especially at the gate and on Mr. Hunnewell's house on Beacon street.

"Florests were slow to take hold of it and I urged upon them the profit of propagation, and it was in that way it became known as the Boston ivy. Now it is such a universal favorite with us almost every public and private building must have it. I suppose it is known throughout the continent.

"As regards culture I have found it adapted to almost all kinds of soil if well drained, and it is not very particular about aspect or exposure; probably it does best with a south or southwest exposure.

"Some of our people may have returned after vacation from a trip up the Hudson or along the moist atmosphere from Cape May to Bar Harbor with a sprig of Boston ivy and planting it in rich soil with a dry sub soil and felt disappointed next spring not to see it start and thrive as it did at the sea shore."

A HORTICULTURIST'S IDEA OF A FARMER'S HOME.

By C. CHURCH, Walworth, Wis.

WALWORTH, WIS., February 1, 1892.

A few days ago I received from Secretary Hoxie a copy of the program of the annual meeting of the Horticultural Society at Madison. My first thoughts were: I should like to attend for it is a favorite subject with me; the next, it is impossible under present circumstances for me to attend; next, I should like to contribute something to help the society along. The question arises, what can I do? it being nearly seventy years since I graduated in a little log school-house, standing in the woods down in Broome county, N. Y., and for nearly fifty-five years have been trying to make a comfortable, happy and pleasant home here on Bigfoot prairie, that being about the height of my ambition. Necessarily then, it must be a weak production, and waiting till the last day, I resolved to use one evening as best I can to convey some thoughts on the subject, hoping some good may grow out of it. There is no place on earth so lovely as sweet home when surrounded with objects of a cultivated taste. I am thinking of the country home — the farmer's home; it depends largely on its horticultural arrangement for its beauty and loveliness. The first essential arrangement is the lawn — with proper care. The next would be the well ordered ornamental trees of different varieties. Then come the beautiful flowers, properly arranged and well cared for; and then, for real enjoyment, health and happiness, come in the different kinds of fruit, and for the farm, I would place the apple first, above all other kinds of fruit that grow in this country or anywhere else. I have a few barrels of Fameuse now (February 1st), well preserved and luscious to eat; I wish I could treat you to some of them. Then come the small fruits — grapes, cherries, gooseberries, currants, blackberries, red and black raspberries, strawberries, etc. I raised a fair crop of all these kinds of fruits this year, and know they can be successfully grown in this section of country. The peach, plum and pear are quite uncertain with me.

I have omitted to speak of the dwelling-house and other buildings, for if he has the surroundings spoken of he is sure to have a good, well ordered house to live in, and other commodious buildings that are necessary. There is something of more importance still. Surely, he has cultivated his mind and intelligence, and will be likely to transmit it to his children.

In our homes originates the Basic principles of government; how important then that the home is what it ought to be. I never saw any one so low and debased but he admired a good, well ordered home. In conversation with one of the Milton college teachers, he said he could tell the students that came from the tobacco farms in the surrounding country by their incentives to study and cultivate their minds. It has been said by one, the highest in authority: " By their fruits ye shall know them."

RAISING BLACKBERRIES.

BY S. O. WITTARD, New London.

Agreeable to request I will give some of my experience in raising blackberries; and I do not know of a better way to do so than to describe my present mode or system. For soil prefer sand with clay subsoil. Plant as early in spring as the ground can be worked (I think spring ploughed land holds moisture better than fall ploughed), in rows eight feet apart, and plants three feet apart in the row; variety, ancient Briton. Have tried eight varieties, and think this much the best for our climate as regards to yield and quality. Plant in fresh stirred ground about six inches deep, and pack the ground about the plant with the feet. When the young shoot is eighteen inches tall pinch off three inches of the top. The second year pinch off at two feet from the ground. The third year and thereafter at thirty inches and the laterals at two feet. Cultivate once a week about one inch deep and oftener following a rain if the ground is inclined to crust, keeping the capillary attraction broken, saving moisture, and keeping the land loose and clean. Frequent cultivation is both food and drink, but it must be shallow so as not to cut or break a root (this is imperative). I destroyed the two first patches in digging plants, so that they hardly leaved out again.

Five years ago I dug plants on one-half of another patch, and with extra fertilizing it has not caught up with the one-half that the roots had not been cut. Blackberry plants have two sets of roots. The feeders or eyed ones are near the surface of the ground. The other set run down from the base of the plant. I have traced them down six feet or more; any one wishing to raise plants must devote a certain portion to that purpose. Cannot succeed in raising berries and plants from the same hills. There are two kinds of plants or are obtained by two methods, one is to dig around the sprouts or suckers that come up from the eyes on the surface roots by cutting the roots off on each side, leaving a piece of the parent root on six or eight inches long. The other method is to take up these eyed or surface roots in the fall and cut them up into two inch pieces, bury them in the sand in the cellar or below frost through the winter, for the ends to callous. And in the spring place them in a warm exposure, covered about two inches deep and slightly mulched and kept warm until the buds start. Then plant in nursery rows and slightly mulch. The following spring what grows will be root cutting plants. A forcing house is a great help in making cutting plants. To get a good strong plant use only strong plants, those with more or less fine fibrous roots on, the weak ones put in nursery rows and what grows can be reset the following spring. Enrich your ground the fall before planting, at the same time fall plough to do away as much as possible with the cut-worm. Blackberry shoots are the cut-worm's especial delight. If the cut-worms cut off the shoots of the young plants it dies for want of leaves or lungs. A year or more older when the roots are established, if the shoots are cut off the roots will force out later buds, the life will be preserved, but the canes will be weaker for that year. If the cut-worms are bad as soon as the blackberry is planted, transplant a young mullen plant beside the blackberry cane and put Paris green on the mullen. I have poisoned millions of cut-worms by doing so, and they have destroyod at least 10,000 plants before we discovered this way of dealing with them. At this time in the spring, say the 1st to the 20th of May, the worms are eager to get something to eat and will attack the bait before the berry shoots are up. Now in cultivating I use the Planet pruner with the sweeps, or two winged teeth on the back, middle, and two back side legs of the frame. The side sweeps cut twelve inches wide and the middle one fifteen inches, thus cutting three feet of surface, placing the wheel about half way back and slanting backwards, so the wheel acts as a pivot and the teeth can be moved sidewise without taking them out of the ground. This tool thus arranged is easy to handle, easy of draft, cuts off all suckers and weeds between rows, and stirs the ground, but run the teeth only one inch deep. If I hear the roots snapping, stop and lower the wheel. In fertilizing make the ground rich before setting the plants to give them a vigorous shoot. After that I have depended mostly on ashes and bone meal, or bones dissolved with strong ashes kept moist; we use about 100 bushels ashes per acre. Blackberries seem to require a large amount of potash and phosphoric acid, but little nitric acid. It may be that they, like corn, grow and mature at a time of the year when we have the most thunder showers, are supplied with nitrogen from natural sources. What has been the history of our great wild blackberry plantations of the northern woods?

Fires have followed the lumbering operations, and usually have burned hard and deep, and burned up all soil or vegetable or organic matter, down to the barren sand, leaving only ashes. The blackberry came in and a few crops grew and then died out. It would seem that when the 'potash a (stem former) and the phosphates or (seed former) was used up, then no more berries grew. Ashes we know are the mineral substance of what was wood or vegetation. The nitrogen has been removed by the fire. They are composed mostly of carbonate of lime, with about 9 per cent. of potash and 2 per cent. of phosphoric acid; hence we use some bone to balance up the phosphates. Raw bone has from 2 to 3 per cent. nitrogen, so if we have for a fair ration potash 9 per cent., phosphates 7 per cent. and nitrogen 2 or 3 per cent. Potash and phosphates remain in the soil until used up by growing crops. The nitrogen lasts but for one season. We apply the ashes broadcast. If I could not get ashes I should get some form of potash and raw bone meal. I have noticed that the more ashes I have used the sweeter the berries. The quality is better and they keep longer. I have shipped berries when they have been on the road four days and arrive in good condition. Traveling men have often told me that our blackberries are the sweetest that they meet with anywhere, and all the married railroad men that eat at the junction here have to get one or more cases for their families, and I can attribute it to no other reason than the free use of alkalies. Good crops of blackberries can be raised with barnyard manure. But it seems a pity to waste most of the nitrogen when it is needed so much on other crops. Our average yield of berries has been 200 bushels to the acre. On the first patch I picked a peck to the hill, or at the rate of 400 bushels to the acre. The next patch at the rate of 350. I have no doubt that with all conditions being favorable 400 bushels can be grown on an acre. If I could I would irrigate. Next best thing is to mulch in the row and cultivate often in space between rows. In the matter of supporting the bushes we set posts 20 feet apart in the rows and use wire for supports. If one wire, we tie or fasten the canes to the wire with willows, taking the willow the left hand near the tip, with the left hand pass the tips of the willow around the wire twice and bringing the extreme tips of the willow up between the wire and the stalk of the willow. Now bring up a cane against the tips. Now wind the willow once around the wire and bring up another cane, and wind again, and so on until all the canes in the hill are fastened to the wire. Then turn the butt end of the willow back and tuck it in beside one of the canes. This leaves the hill in very fine shape for picking. It is spread out fan shaped. It takes more time to fasten them up in this way than it does to put a wire on each side of the posts. But it may pay in getting the berries picked cleaner. The pickers dislike having the bushes massed together too thickly. The posts should stand about 3½ feet above the ground. We use fence staples to fasten the wire to the posts. Soon after the berries are picked. The next thing in order is to cut out the bushes that you have just picked the berries from, to get the plantation ready for laying down for winter protection. Having done the pinching off the young growth previous to this while growing. The best tool I have ever used to do the cutting out is a long handled pruning shears, handle 3 feet long, cut as close to the ground as possible. Before cutting out the old wood we usually take off the wire. We have a wheelbarrow made with posts, between which we place spools on which to wind the wire. The spools are made all alike with square holes in the ends to receive the axletree. When the spool is full slip it off the axle and put on an empty spool. It is a good plan to have the rows numbered, and write on the spool the number of the last row so as to commence putting on the wire in the spring at this number. In this way the wire will be put back where it came off. Rows vary in length. After the old wood is cut out pull it out of the hills with a fork and gather it in piles ready for burning. Either carry it off the patch to burn, or if too far, keep the brush in piles until the bushes are laid down and carefully prepare spots to burn them on the covering, all tips and exposed parts of the bushes lain down.

Winter protection? Yes to be sure. If a crop every year they must be laid down in our climate. The Briton is as hardy as any, and with matured wood, will stand at 20° below zero, but below that it will be injured. So will the wild ones or any other sort. There is no such thing as a perfectly hardy blackberry. There are two ways in laying down bushes. One is to make a mound of earth at one side of the hill and bend the hill over it, and hold down the top of the hill on the ground. But under all circumstances this method is not reliable. Five years ago, to save three day's work, I lost $300 by pursuing this method. The season had been dry, and the bushes had made a late growth, and the wood was not well matured. I had covered the tops with earth, and the fruit buds came up in spring uninjured, but about Christmas we had a rain that settled the snow down to three inches of the ground, and a hard freeze followed it and cracked the bark on the exposed portion of the canes that were bent over, and the sap escaped and run out of the cracks in the sides of the canes, and the fruit buds soon faded away, and I got no berries above the snow line.

The usual and best method is to bend the roots and not the stalks, and lay the whole plant down flat on the ground.

I do it in this manner. With a spading fork I dig away the dirt from one side of the hill until I make a cavity under the crown of the hill, to make room for the roots to bend in, as the plant begins to go over the crown settles into the cavity that has been dug, so the roots on the front side bend under and the back roots come on the top of the crown, and the stalks lie flat on the ground. Now to proceed after the cavity has been dug: Step on the opposite side from the cavity and place the fork against the hill just a little above where the canes were nipped off and push gently, at the same time place the side of the foot against the stalks of the hill, about two inches from the ground and press with the foot, as you push with the fork, and the most of them will readily go over. If they are are stubborn dig the cavity larger, but do not break the roots, take a little more time and remove sufficient earth, and where the hill is over flat crowd the fork down into the ground so as to pin the hill down. With the hands encased in thick buckskin mittens, gather the outside branches into as compact a form as possible.

While you are doing this the help that is covering the bushes stands ready to cover up the hill by commencing at the side with a long-handled shovel, skimming off the dirt of the top of the ground, and give the shovel a twist so as to flap the dirt over on the brush, and keep putting on dirt until it will hold the bush down, then a shovelful of dirt on the roots where the cavity was dug. It is well enough to cover the whole length. Do not let the men covering spade into the ground, but skim off the surface. It needs three men to work to advantage. In the spring, about the first of May, or when it is time to take up the grapes, with a four tined manure fork, push it under the side of the hill about two-thirds of the way to the top of the hill and gently lift, at the same time shaking a little and they easily come up and are ready for putting on wires and fastening up. Hoping whoever reads this may avoid and profit by my mistakes and be rewarded only with success.

ARE HOUSE PLANTS INJURIOUS TO HUMAN LIFE.

BY W. MCFARLAND, Evansville.

There is no visible reason why healthy plants should injure the health of the inmates of the home in which they are kept. The law governing plant life is that they absorb from the atmosphere carbon, in return they give oxygen. The carbon obtained from the atmosphere by the plants, is to a very large extent, supplied by animated nature. The exhalation of the human family contributes quite a percentage of the whole in the form of carbonic acid gas, formed in the lungs and liberated at every breath; thus the commerce of life goes on; man inhales the oxygen contributed by the plant, converts it into carbonic acid ready for the sustenance of plant life.

Combustion also affords its share of this plant food. Every lamp we burn is a contributor of this carbonic acid represented by the chemists, thus, $C. O.^2$, showing it to be a compound of one part of carbon and two of oxygen. The plant absorbs the carbon, liberating the oxygen for general use.

If my statements are true to the facts in the case, are not plants in our dwellings a benefit rather than an injury? I say they are and yet they may be the innocent cause of sickness in the family.

In order to keep plants we must have earth. The earth used often contains partially decayed vegetable matter, which in the continuance of the process of decay may emit deleterious gases inimical to human life and so injure the health of parties inhailing said gaseous products. A large proportion of the so-called vegetable mould, so much in demand by parties keeping house plants, is not fit for use in potting house plants, on account of the presence of this decaying matter.

Some parties use fertilizers, which however good for plants, are rather objectional when viewed from the health standpoint. For instance a certain frugal housewife, sets her mouse trap, caught the mice and buried them at the roots of her favorite plants. I have known other fertilizers used, which were almost as objectionable as dead mice, decaying in the parlor.

The question now presents itself, have we any sure, safe, inexpensive remedy, to protect us from these dangerous, invisible, miasmatic products of decomposition in our flower pots? Yes, thank God, we have, charcoal in small lumps. I use the term "lumps" to arrest your attention, so that you will not reduce it to powder. Pulverized charcoal is good, but little blocks are better. Animal charcoal is to be preferred. This can be made by taking large bones, placing them in a cast iron kettle, heating the kettle till the bones cease to burn (blaze), put on the cover, lute it with ashes or fine sand so as to exclude the air from the bones. When cold break into small pieces which you will lay on the top of the earth in your flower pots. This done the danger is at an end.

We are told there are exceptions to every rule. What is here written as to plants being injurious follows the rule, but we are aware that some plants have a upas reputation. The Oleander is said to evolve some deleterious matter, but who can tell whether this is so or not?

Cactus grandiflora is a remedy administered by a certain school of medical practice, in heart trouble. (Pain and palpitation.) The presence of this plant in the room of a patient under treatment for the above, has been known to interfere with the condition of said patient and on its removal all went well. Evidence is much needed in regard to such plants and their action on the human system. Who can give it?

REPORT OF OBSERVATIONS FOR 1891.

By GEO. J. KELLOGG, Janesville, Wis.

The fall of 1890 as well as the mid-summer were favorable for fruit bud formation, and early maturity of wood growth; plenty of rain later (up to November 18th) put everything in good condition for winter.

The latter part of November and most of December were unusually pleasant, giving plenty of time for fall work and protection to fruit plantations, which owing to the open winter were in many cases unnecessary. The weather was mild, zero once in December the 4th 3 below. The coldest in January, 1891, was 3 above with light rains and snows during the month

The coldest week for the winter of 1890-91 was during our session at Madison, twice below zero; the coldest, February 4th, 4 below, the month closing at zero, while March 5th and 14th gave us zero; the wild geese came March 20th, blue birds the 28th; although the frost disappeared early snow and rain prevented spring work until April 13th; ground very wet up to April 20th, then so hot as to bake the mud, the season was very short, everything rushing into leaf; no frosts from April 16th to May 3d and the thermometer from 56° to 75° during the middle of the days. Two light rains in May and frosts May 3d and 4th, ice 5th and 6th, frost the 7th, ice the 16th and 17th, frosts the 18th, 26th and 27th.

The first bloom of strawberries, plums and cherries May 2d; first blackberry bloom the 29th; the wonder is that we had any crop of small fruit except blackberries.

The severe drouth of May (only enough to lay the dust twice) made transplanting very difficult and uncertain. We never before planted so much ground having to use water for every plant, but our stand was a success; the first week of June gave us six inches of rainfall; first strawberries June 3d; first to market the 11th; first that filled boxes was Warfield, following close were Haverland, Crescent and Wilson, we fruiting about sixty varieties. The 4th, 5th and 7th of June there were frosts in northern districts; from this time the thermometer jumped to the eighties with with scarcely a shower till July 2d. The heavy rains the first week in June left the strawberry ground so wet that the tramp of the pickers packed it as it dried, even where the mulch had been removed and the ground cultivated and mulch returned there was but a slight difference in favor of this treatment, it did not pay for the extra labor and the old beds gave the best and most fruit.

The hot weather hastened the strawberry crop, and brought us first ripe raspberries May 29th yet we continued marketing strawberries till July 15th the latest berries being Manchester, Mt. Vernon and Warfield.

The bloom of Plums, Cherry and Apple was abundant; we sprayed from June 1st to 10th after which we could not find the time, those who did not spray had better fruit than we did owing to better soil and location; we had less codling moth and less curculio than usual whether it was because of spraying or because the crop of moths and bugs were less from the loss of fruit of 1890 we cannot tell. The plums promised a heavy crop, but the aphis got in their work early and nearly ruined the trees as well as fruit in some localities; this was the case on our home lot while on the north part of the same eighty acres not a trace of injury could be found; and De Soto yielded to breaking, and came to maturity. I think we must use emulsion early for this pest. The cherry slug did great damage throughout our district; not having cherries enough for the birds we did not have many slugs and had none on our nursery trees:—lime, ashes or road dust we believe the simplest remedies for this slug; arsenical poison or kerosene emulsion will clean them out.

The drought of June, July and Aug. shortened the berry crop and in many instances cultivation and mulch did not save it from injury.

The cool weather of July and Aug. gave fearful apprehensions for the corn and grape crops, and up to the *10th of Sept.* the prospects were very promising for a crop of *green* grapes.

The 14th of Sept. gave frost in northern districts but the Ther. immediately went to the nineties and continued there to Sept. 24th closing the month at 70; and no damaging frost till Oct. 10th, our corn and grapes were safe.

Grapes were well matured, we could hardly find green ones enough to fill orders for jelly.

That heat of Sept. and Oct. so beneficial to the grape and corn crop: while it put the blush and high coloring on our apples it injured their keeping qualities, so that those who sold early realized best, as our state was flooded later with choice eastern fruit and to-day apples are not worth as much as in November, even when sound; the careful picking and handling of fruit and storing for winter in the colder cellars than for vegetables is of very great importance.

The drouths of summer checked the flow of sap, matured a fine crop of fruit buds, and with the present mild winter (coldest 14 below zero) there is prospect of a bountiful fruit harvest in 1892.

The pressing activity of our berry harvest prevented our spraying for fungoid diseases; the rot did not trouble our grapes, except the Janesville, which is in a hot, close corner. Fungus and scab did not do as much damage as usual in the orchard.

Anthranose did more damage in our black raspberries than we at first supposed, and spraying for this disease needs careful experiment.

A few words in review of the strawberry may not be out of place: In June I denounced the Michel's Early; since then some of my southern friends have denounced me. This only shows that some varieties as well as some men are often out of place. It may pay when we have no frosts and as a vigorous pollen producing plant, but we do not recommend it for the fiftieth kind. We must insist that producers and those who introduce new fruits must submit them to our Trial Stations before offering them to the public.

With all the light of experience and our better judgment, we now class as among the best of the perfect flowering strawberries, Earle, Wood, Enhance, Sandoval and Hoard; of pistillates, Warfield, Bubach No. 5, Haverland, Princess, Cleveland and Staymans No. 1.

We find that all varieties do best where they originate and many of them need the petting they never get afterwards.

The unparalleled yield of fruit of Mr. Wm. Von Bombach of Wauwatosa, last season, known to most of you, "seventeen hundred bushels choice merchantable strawberries, from five acres, less ten square rods, paths and alleys included, from three rows Wilson and six rows crescent," leads us to carefully consider the question of holding on to our old friends, the best old varieties.

THE FLOWER GARDEN.

By J. A. PETTIGREW, Superintendent Lincoln Park, Chicago.

Lovers of the beautiful and natural in gardening will note with pleasure the obvious tendency of thought and effort toward restoration of the old-fashioned style of gardening.

The old-fashioned flowers of by-gone days, so dear to memories of most of us and so replete with old associations, are being brought from the garden of the cottager where they have been content to hide and bide their time.

Many of their almost forgotten faces are now again to be seen, seemingly to us all the sweeter for their long and undeserved banishment.

The object of this paper is the encouragement of this tendency in the direction of natural gardening, and the endeavor to curb within reasonable limits the mad race after florid and artificial effects as depicted in the "bedding out" style of some modern flower garden.

This artificial style has now long prevailed almost to the utter exclusion of any other form of decorative gardening.

The sweetness, beauty and variety of the old-fashioned garden borders succumbed to glaring masses of color, or to intricate designs of geometrical or carpet work.

Nowhere could be found the old quiet nook where familiar floral pets could be watched and waited for.

A gardener's proficiency was too often measured by his ability to design monstrosities in floral decorations, while skill with the sheep shears has ranked as a knowledge of the culture of plants.

The reason for this would be hard to find. It certainly was not on the score of beauty, appropriateness or good taste. The painter selects his floral subject, not from the geometrical garden, or the flaming parterre; he prefers the more natural beauty of the woods and fields or the sequestered garden corner.

Why, then, should we, who demand nature in art, tolerate art in nature?

The old-fashioned flower garden commends itself for the opportunity it presents in the cultivation of a great variety of plants and its long continued season of bloom; from the first peeping of the snowdrop through the snow, until the last Christmas rose is gathered, what an endless array of beautiful forms greet us from day to day and from month to month.

Such variety and long-lived beauty is not obtainable in the parterre or ribbon border, where scarcely more than a dozen species of plants enter into the most elaborate display, and where the season is limited at most to three months of summer.

As an educator the old-fashioned garden further commends itself to us; among its borders teeming with such variety, a comprehensive knowledge of plants can be acquired.

A part may be devoted to experimental work, such as testing the hardiness and conditions necessary for growth of trees, shrubs and plants that may be new or of recent introduction. Such a pursuit is fascinating and tends greatly to strengthen the love for plants, apart from the value of the information obtained.

Nothing need be banished from the garden but pestilent weeds. Each expedition to the woods or hills may be the means of adding some member of the floral family to its fold. The culture of old fashioned garden plants is a pleasure that can be enjoyed by anyone possessing a garden spot. No expensive glass houses are needed for winter protection. The hardy class once planted, with care will increase and at each division and replanting sufficient spare stock will be found for exchanges. A frost proof cellar will suffice to protect many plants of exotic extraction when of tuberous or bulbous form of growth.

Other and many beautiful tender plants can be produced from seed in the open border with little expense and some trouble.

Love, however, lightens the labor of those who follow the pursuit of gardening for the pleasure to be found therein.

The Aquatic garden comes within the scope and design of the natural, and is one of the most interesting and fascinating forms of gardening, as well as one of the most beautiful. Water adds a charm to any landscape, and the charm is intensified when its surface is studded with the blooms of the nymphæa or lotus embossed in their rich green and luxuriant foliage. Many and varied are the forms of Aquatic growth that are available by their grace or beauty for the embellishment of the Aquatic garden and all are beautiful. But the Aquatic garden to bring out its full beauty should, like a jewel, have a proper setting; one should enhance the charm of the other. Such a setting may be of the character of the wild garden; the sheet of water need not be so large as to make recognition of the plants in the center difficult; the edges of the pond or lakelet may be irregular in outline and elevation, with here and there a rock or root protruding through the surface, and surrounding it may be an undulating or if circumstances favor, a broken piece of ground with a background of trees or a rocky cliff.

The ground may be partly rock covered; other parts may be of grassy sward; again another spot may be covered with shrubs and herbaceous plants, all carefully planted and of native kinds, as are the partially fern-hidden rocks and the vine-covered stumps and roots. The tasty and skillful gardener will be able to carefully nurture and train the plants in such a spot without betraying any evidence of his work, so that while all the advantages of culture are enjoyed by the plants, the natural wild beauty of the picture is not destroyed.

It scarcely comes within the scope of this paper, nor is it possible to formulate any general rules for the establishment of a flower garden, so many and varied may be the existing considerations; soil, aspect, topography and surroundings, all have to be studied.

A blending of the component parts of the scene has to be accomplished without permitting any incongruity to enter into the arrangement. However, it may be said generally that an old fashioned garden should have a background of trees and shrubs, the lines of which should be curved or broken. The line of the border should harmonize with the foliage line, and the foreground should be of turf well kept.

Beautiful effects may be produced under the trees and shrubbery by planting bulbs for spring flowering, such as crocus, narcissus, hyacinths and snowdrops, together with ferns and cypripediums and wild phloxes, hepaticas and trilliums too, should not be overlooked for spring flowers. Many others do equally well in partial shade, and will amply repay the labor bestowed. The border arrangement should be with the tall plants next to the shrubs at back, down to the dwarf in front, yet planted with such design as to produce, as nearly as possible, the impression of spontaneous growth.

Avoid formality; plant species or varieties in clumps of size to show the plants in their individuality and not dotted and repeated frequently throughout the border.

It is not necessary to enumerate the plants to produce a succession of bloom. The list to choose from is rich and varied. Suffice to say that commencing with snowdrop, narcissus and hyacinth bulbs in spring until the last Michaelmas daisy or anemone or gentian, is gone, a constant kaleidoscopic succession of rich and beautiful effects may be produced, ever varying and changing as the months roll by.

Much more might be written on the subject, but it is hoped enough has been said to stimulate or strengthen a little the desire to be natural in gardening.

VARIETIES OF CRANBERRIES.

By A. C. BENNETT, Appleton, Wis.

In looking over the products of nature in their wild state and comparing them with the same productions under cultivation, we find in their wild state, both in the animal and vegetable species, the same general laws govern, and these general laws become more apparent as they reach a higher and higher state of cultivation. In the wild state we find but little variation, while under cultivation they have changed almost beyond belief.

We look among all the wild horses of the earth for a Percheron, a Sampson, or a Morgan and find them not.

In 1840, in southern Illinois, there were great numbers of wild hogs, all looking nearly alike, with their big heads, long snouts, long tusks, slab sides and big legs. At that time they differed in color, which seems to be one of the first steps toward improvement; but we might look in vain for a Suffolk or a Berkshire among them, and it was astonishing how soon small tame pigs became wild and how closely they resemble those that had never been tamed.

There is in northern Michigan an island called Hog island, on which tame hogs were placed many years ago; about ten years ago I was near its banks and was told that there were a few left and that they were in every respect a perfectly wild hog. This reversion to the original wild type showing clearly the source from which they came. The superiority of our horses, sheep, cows, hogs, dogs and hens are simply developments of nature under favorable circumstances, and man himself owes his development to favorable circumstances.

We look upon the wild plum, cherry, grape, thorn-apple, and wild peach and look in vain for our present early and late varieties with their luscious melting flavor.

Over 900,000 distinct species of animals have become extinct, including all grades from the smallest insect to the monster mastodon. They have left their bones, shells, or imprint to tell the story that they were unable to overcome the difficulties that surrounded them.

Of the number of vegetables and varieties of fruits that have become extinct we know but little, owing to the perishable nature of their composition, but there are no doubt millions of them, including the one that stood in the garden of Eden.

Darwin's theory of the survival of the fittest only applies to the *wild, wild* world, and it cuts no figure where the protecting hand of man defends the weak against the strong.

We plant our gardens and defend the tender plant against all others, and the result is large ears of corn, large potatoes, cabbage, etc.; while without such protection they would all be small, and in time go back to their wild state, or become extinct.

Every animal, every plant, every kind of fruit that has received the protection of man has developed in a short time many new varieties never known to exist before and that never would have been developed except for the favorable circumstances which the protection of man gave to them. These laws are universal. Applying these laws to the fruit now under consideration — the cranberry — we observe in the west the little gray or moss berry as an original type and extending from ocean to ocean.

When marshes in the east became sanded and the hand of man protected the infant plant many berries dropped to the sand and from them seeds sprang into existence a much greater variety of berries than the original marsh produced, and so long as such favorable circumstances continue we may expect continual additional improvements in varieties.

The cranberry growers of the future must learn to discriminate between these varieties; to separate the early varieties from the late, the thick skinned from the thin, the large from the small, the prolific from the barren, their adaptability to his particular location and many other essential qualities.

In the east, especially in New Jersey, they are much troubled with berries rotting on the vines, like the water-core apple rotting on the tree.

Mr. Busbee, the inventor of the Busbee cranberry mill, said that on his own marsh with his right hand he could pick where the berries were all sound while with his left he could reach spots where the berries were all soft, or rotten, and that these rotting berries were in patches and also scattered through the marsh. The existence of a fungus growth on the vine or berry may be the cause or the effect of early decay. In a late report the loss from this source alone was estimated at many thousand bushels.

Now unless a better cause can be shown for this rotting I should strongly suspect that these decaying berries were produced by a new variety of cranberries which have been produced from seed dropped from the young vines during their first or second year. It was long ago observed that berries grown on young vines had a strong tendency to rot, and it would not be surprising if the seed from such should produce some early rotting varieties. The existence of the early black cranberry which keeps only a short time, being only one step in that direction, shows clearly the possibility of another step in the same direction.

Fifty-seven years ago I was born in western New York, in the finest fruit growing section of the state. At the age of thirteen years I had learned to graft and bud, and at nineteen I had planted a small nursery from seeds with a view to developing some new varieties of fruit. On my father's three farms there were, all told, about 400 apple trees; about 100 of these had been grafted, leaving about 300 trees still bearing their native apples, and no two of the lot were alike. The grafted apples were kept separate and sold by their proper names, the balance were gathered and mixed like our cranberries, some good keepers, others keeping but a week or two, all went in together to feed the hogs, to the cider mill, or into the cellar bin for winter use.

Let us remember that at the time the seeds were planted from which these trees grew, there was not a foot of railroad in the world, for they were old trees when I was a boy. They were probably raised from seeds which were sent by mail on horseback form the far east to the then far west (Western New York), or they may have been from some stray apples which found their way to the early settlers. Of the product 300 varieties of apples were produced, only two or three of them all were of real value. showing that the chance of producing a valuable seedling from such seed was only one in one hundred.

Slow and uncertain as this process is, it is the only source for obtaining new varieties of apples. So with the cranberry, all new varieties come from the seed. With the apple, strawberry, peach, plum and cherry, the improvement has been so great that the original wild varieties no longer find any place on the markets of the world. Who of to-day would think of planting the wild strawberry and putting them on the market in competition with the Wilson, Jessie and other popular varieties. So with the wild cranberry of to day, in time it must go; its stay is short; it finds a place in the markets now because there are not enough of the better varieties to supply the demand, and also to the fact that many of the larger varieties are of an inferior quality and short keepers; but the time is coming when the cranberry grower will apply the same amount of intelligence to the growing of cranberries that has been given to the apple, peach, plum, strawberry, etc. Then the grower and the dealer will know the winter keeping varieties of cranberries from the fall fruit by their proper names, shape and color, and each kind will receive its proper price the same as the fall and winter apples do at the present time.

The next ten years will show a vast advance along this line, probably twenty new varieties will be added to our list, and this convention will be expected to be able to list them correctly, and to recommend as worthy of cultivation some of the early and some of the late keepers; and that there should be a sweet cranberry discovered is not beyond the possibility of the near future.

The farther removed the animal gets from the wild state the more rapid is the improvement and the moulding hand of man finds in each succeeding generation better material to work on; so in the cultivation of any kind of fruit, each step in the line of improvement makes the next step easier, and the results more and more certain.

Favorable conditions will often change the size, color, shape and flavor of fruit. This is fully proven by the fruits now being raised in California which were not native in that country, but being transplanted from the sterile soil of New England to the fertile valleys of California aided by irrigation and a favorable climate, many kinds of fruit have more than doubled in size, and the shape and flavor are materially changed in some cases.

If we were to transplant our cherry berry to a favorable spot in California and give it proper irrigation and the longer season to grow in, they might send us back as the result, berries full an inch in diameter, also changed in color and shape to a limited extent; but bring the vines back here and subject them to their former conditions, and they become the cherry berry again. The egg plum of California, one of which will fill an ordinary teacup, if planted back in New England becomes a dwarf by the side of its California brother.

We no doubt have on our marshes cranberries which are like our Duchess apples, fair to look upon, but impossible to keep for a single month. We know the Duchess apples at sight, but who has learned to point out the Duchess cranberry?

The Ben Davis apple that will keep until apples come again is well known, but who can point out the Ben Davis cranberry? In less than ten years from now there will be fifty voices that could answer, "I can do it." Then will the war on worthless varieties commence in earnest. In western New York many thousands of apple trees have been cut down as encumbering the ground, and have given place to well known valuable varieties, and an appreciative public are willing to pay for the change, while the old fogies that did not cut theirs down are still raising pig apples.

We raise cranberries for profit not for fun, and what has been found most profitable in all other kinds of fruit, animals and vegetables, will surely apply to the cranberry. The best of everything is the most profitable to raise.

Which variety among the cranberry is the best with our present knowledge is very difficult to decide. We know but very little except on a few points and we will confine our remarks to these and wait until we get an increase of knowledge, which time and the World's Fair, I hope, will give us. One thing is certain, the most productive variety in the world would be most desirable, other things being equal. The second point is equally certain, that the largest cranberry in the world, other things being equal, would be the most desirable. Third, a dark red colored variety would be most desirable, because they do not show bruises and decayed spots as a lighter colored berry would. The early black of the east will pass for sound berries when so bad that fifty per cent. of them would be rejected as unsound if they were lighter colored. Fourth, the earliest varieties on earth would be the most desirable, other things being equal. Fifth, the longest keepers. Sixth, the best flavored.

The shape of the berry, name, by whom grown or when or where, cuts no figure. In selecting the best variety, if we take a lesson from nature, we will soon learn how impossible it is to combine all these desirable qualities in any one variety. In all the ages past nature has never united any three of them.

First, the most prolific in nature are small. Gnats and flies increase by the million. The eagle, condor and ostrich increase very slowly. The minnie fish breeds by the million, whales are scarce. The extremely large in everything are not prolific.

Again, that which ripens early soon goes to decay; this is an inflexible law of nature. We can never combine these two qualities of early ripening and long keeping. The apples that ripen in harvest time and the early fall, are fall apples and soon decay. That which keeps best matures slowly, and as it were, in the very shadow of winter. The dark colored are thick skinned and often of poor flavor, and especially is this the case with the cranberry.

There may be a possibility of combining the two qualities of dark color and good flavor, but before it is done the public will have learned that for fine quality to select the light colored. The public are slow to learn, and still slower to unlearn. In seeking after a perfect variety of cranberries, we are like the ancients who sought for the unknown God. They thought they knew what he ought to be like but could not find him. With our present limited knowledge, the safest course seems to be to avoid all extremes. A cross between the extremes of any species tends to produce a medium and is often prolific, while a re-cross is often barren, so that we might expect to produce a medium sized berry that might be even more prolific than the small one.

Starting with this medium sized berry and aiding it by furnishing it with favorable conditions so that its growth may be uniform, then shielding it from the early frosts of winter, and allowing it to slowly come to maturity — all this would produce a good keeper, provided it contained the right elements to start with. To aid it still further in its keeping qualities, we should be be very careful not to mix with it a single berry whose keeping qualities are not fully equal to its own. This is an important point, for as long as fall and winter berries are mixed, the decay of the fall berries will affect the value of the winter variety.

In the matter of quality, we who have been raising berries eat our own, and the taste or flavor of other varieties has not been tested by many of us.

In this respect I have had better opportunities probably than any other person present. I have traveled extensively in the non-producing sections of this country where cranberries were shipped in from every quarter. I have also bought different varieties of cranberries on the Chicago market and taken them home and had them cooked in the same manner as our own. I have also made many inquiries of merchants and their married clerks, where I found them selling both the eastern and western berry, as to which they preferred for their own family use. The testimony from this source and also my own experience has been decidedly in favor of our western berry. I never found but one man who said the flavor of the eastern berry was the best, and he was a Boston man fresh from the Hub, and as he then lived in Chicago where nearly all the berries this fall were eastern berries, the probability is that he had been eating eastern berries cooked in lake water which made the difference.

I sent my sister in Massachusetts a barrel of our cranberries. She had always used the eastern berry, and finding the ones I sent her of better flavor she distributed them among her friends and acquaintances, and she wrote me back that they all pronounced them the finest flavored cranberry they had ever tasted. Mr. Stansbury also sent some of his berries to the east and received back the most decided statements in regard to their superior quality. The east raises on an average a larger berry than we do, but in the line of quality we hold the golden prize. From this then, it would seem that the most perfect berry, as far as quality is concerned, will be found in the west.

What we of the west lack is distinct varieties. We need an early berry to meet the demands of an early market. We need an extra large variety to satisfy such as are willing to pay for show and wind rather than substance. The extra price for such must pay us for their lack of productiveness and poor keeping qualities. Then we need a medium sized berry, as large as we can get without sacrificing other good qualities; one that will bear every year by the million, of fine quality and that will keep, when properly put up with ordinary care, until cranberries come again.

We do not need these varieties all mixed up like pig apples; they should be planted separate, so that they can be sold on their merits. All these varieties may now be growing on our own or our neighbor's marshes, but in patches so small as to have escaped our notice, and in the wild state, bearing some years and not others, we lose track of their location. I have some vines grown from the seed the fruit from which I shall watch with much interest, and hope to add something of value to our present varieties or else add to my present limited experience by their failure.

I have here some samples which I have good reason to believe were grown from the seed, the whole barrel was a mixed multitude just like these, and were grown in this country. The others are mostly eastern berries, showing several varieties differing in shape, color and flavor; also the Lingdom cranberry, from Canada, which is native there, also in Nova Scotia, Norway, Sweden and other places, the finest coming from Canada. I was not able to get a sample of the Early Black. One wholesale house said they had been out of them for six or seven weeks, and that at that time they were so poor that they were glad to see the last of them. I was surprised not to be able to find any of the McFarland berries on the market. They are the largest variety, and the last year was probably an off year with them.

CRANBERRY CANNING.

BY A. C. BENNETT, APPLETON.

[From original report of Cranberry Growers' Association.]

A new industry must soon start of great interest to Wood county and especially to the growers of cranberries, a canning factory. Can any one tell why all other fruit, and many kinds of vegetables are canned, even to sweet potatoes and pumpkins, and not a cranberry? Why should this form the only exception? Some say because of the acid they contain. Apples, peaches, pears, cherries, gooseberries, and all other kinds of fruit contain acid and are canned successfully, and it appears on investigation that so long as the can remains air tight, the can and fruit are perfectly safe.

One reason why cranberries have never been canned is owing to the fact that until lately there have been no canning factories (as far as I know) in the immediate vicinity of large bodies of cranberries, and the cranberry growers hardly thought of it. There is now a canning factory at Berlin, Wis., I think built last spring, they can corn, beans, raspberries and blackberries. I don't think they have touched the cranberry as they find a ready sale for all their Bell and Bugle berries in a green state.

All other kinds of fruit have been canned for years. The business must have been profitable to the growers of the fruits and the canning factories, otherwise the business would have stopped long ago. Instead of stopping, the number of factories are constantly increasing, and the proportion of fruit canned to the amount sold green is also increasing, and the sales of each largely increased thereby, and the prices maintained, and the grower and dealer saved from loss in the times of abundance. Why this single exception? There is no excuse for it any longer. I am prepared to demonstrate the fact that cranberries can be canned and put on the market at the same price per pound, canners' pounds, as the green fruit, and leave a handsome profit.

There is millions in it I am satisfied, both to the parties who can them and the producer. With canned cranberries the question of foreign markets is settled, we have all the markets of the world at our feet. How many tomatoes would be sold if they were not canned? Not one tenth as many as now. Of peaches, plums, cherries, pears, etc., which are canned, the amount is immense. Suppose none of these were sold only in the green state, you can imagine the glut in the market and the losses the growers would suffer, and their production would decrease to the amount that could be sold in the green state at a profit. With the canning factories acting as a safety valve no loss need occur.

Many kinds of fruit require more expense to prepare them for the cans than it costs to gather them. The apple, pear, apricot, peach, etc., have to be pared and the core or pit removed. Not so with the cranberry. If the cranberry is put up as it should be for the market, they could be dumped into the vats direct from the barrel. It has been a mystery to many how canned fruits of the very best quality, could be sold as cheap as the green fruit. I enclose a full page from the *Grocers' Criterion*, of December 21, giving quotations on canned fruit from which you will see most fruits is put up in two and three pound cans, and they are so billed out. I was told by an agent of one of the largest grocery houses in Chicago that all two pound cans weighed 1½ pounds and the three pound cans held 2½ pounds. On investigation I find this to be the fact including the weight of the can. These weights are not marked on the cans and the groceryman buys them for two or three pounds and sells them for the same and neither himself or the customers know the difference.

On fish and oysters it is still worse. On cove oysters you will see by the list 1 pound cans quoted as 4 or 5 oz., and might well wonder what it means. It means this: that one of these cans contains 4 oz. of oysters the other 5 oz., yet each are sold for a pound, the balance being soup. This wholesale groceryman told me that this short weight on fruit cans was universal, it made no difference whether the fruit came from California or any other state; and that he knew of only one factory that put up actual weight, a 3 pound can of tomatoes full net weight. This party is no doubt a grower who seldom gets beyond his garden fence, and probably thinks there are tricks in all trades but his, if he would get out of his fence he would soon find some in his. This may seem wicked and a cheat but look at the size of the legal standard cranberry barrel and you will be silent. Now this ½ pound shortage on weight makes a vast difference in the figures and cleared up the mystery as to how canned fruit can be sold so cheap. This party also said the 3 pound cans cost, including label, actual cost, 20 to 25 cents per doz., the 2 pound cans 15 to 18 cents, but of this he was not sure and promised to investigate and give me the corrected figures. In figuring it from tinners' stock sheets, good quality, 140 square inches, 10x14 in., costs 3 cents. You can measure the cans in the grocery and make your own estimate.

With the price of sugar at 4½ cents per lb.
With 100 lbs. cranberries at 6 cents per lb.
With pure water at   per lb.

We figure 100 pounds cranberries at 16 ounces to lb., 1,600 oz.; 100 lbs. sugar at 16 oz. to lb., 1,600 oz.; 1-10 part water added at 16 oz. to lb., 320 oz.; total net weight in ounces, 3,520. Now allowing 2 oz. for the cans and label (2 lb. cans) actual weight 24 oz. less 2 oz. for can, 22 oz. net. 3,520 divided by 22 equals 160; showing that 160 lb. cans can be filled from 100 lbs. of berries. As there are 2 lb. can according to the canning scales, this gives us 160x2 equals 320 lbs. at a value of 6 cents per lb. (the price of the green fruit) we have 320x.06 equals $19.20.

Cost of berries	$6 00
Cost of sugar	4 50
Cost of water	0 00
	$10 50

$19.20 less $10.50 leaves $8.70 profit out of which to take the cost of cans and boxing and other expenses. This is figuring cranberries at a low price. When the green berries cost more the profit will be greater as the cost of canning will not be increased and the sugar and water go in at the increased price. At $10 for 100 lbs. the profit would be value of the canned fruit at 10 cts lb., $32.

Cost of 100 lbs. berries	$10 00
Cost of 100 lbs. sugar	4 50
Cost of 100 lbs. water	0 00
	$14 50

leaving a profit of $32.50 less $14.50 which leaves $17.50 out of which to take the same expenses.

I told you there was millions in it, have I not proved it both to the grower and the canning company? To the grower we save his berries and insure a ready cash market no matter how large the crop. If put on the market at the price of the green fruit, I would agree to go on the road and sell 500,000 cans the first year or forfeit my salary. I know they will sell like hot cakes, and in 100,000 places where none are sold now, and they could be shipped to the ends of the earth if necessary, but if canned in good shape the United States alone will take all we can raise. The area over which the cranberry can be grown in less than any other kind of fruit. The proportion of that area which will produce them with profit is very small, much less than is generally supposed. The would be grower finds this out often to his sorrow. This makes the canning of this fruit easy to regulate.

Only a very few canning factories for this purpose will ever be needed, and if the factories and the growers will pull together as they should, there is millions in it for both. I should favor the location of such a factory at some centrrl point in the vicinity of the marshes, where neither party could have a chance to play hog on the other, and where they would be more likely to pull together. At the junction of the two railroads at Centralia, or Grand Rapids, at Babcock, Necedah, or Valley Junction. I am not blowing the bugle for any place, but let it be near the growers where they can be shipped in from the marshes and the barrels or crates can be returned to the growers and be refilled, which of itself is quite a saving. All railroads west of Chicago return empty beer kegs and barrels at one-half of fourth class rates in small quantities. This is a saving we would get. If the berries are canned for Chicago or Milwaukee, or other parties, special arrangement might be made to have them canned in transit, the same as wheat is milled in transit. A carload of wheat is billed at some station in Dakota direct to New York. When it gets to Minneapolis it is unloaded and ground into flour, and is sent on to New York under the original billing; this saves paying local freights — tricks in all trades but ours.

As nearly all the work in the factory is light, a large portion of the labor can be done by women and children. In all the canning factories I was ever in, a large part of the help was women and children, and anything we can do to aid this class of people should be done. The lumber for boxing is here, fuel is cheap, pure water is plenty, help of this kind can live here cheaply. Cranberries will be here in the near future so plenty that the old croakers will no longer repeat, parrot-like, that we had more cranberries before we had any improvements. Some think a canning factory will not pay because it would be idle so much of the year. Let me ask you, would your marsh be more profitable to you if you were to extend your picking from September to December? It would not be standing idle so long, you answer, no, and get all the help you can and secure them before they spoil. So with the canning factory. No berry should be canned before September 15th, and none after December 15th. No grower can afford to hold his berries even that late, and the factory can work to better advantage before extreme cold weather, with its short days, comes. One thing should be distinctly understood to start with, that,

1st. Berries should be bought by the pound, and everybody's berries be emptied out soon as received.

2d. Not an unsound berry should be received, or ever canned under the brand of "Excelsior."

3d. A sorting room should be provided where all berries not up to grade should be re-sorted at the grower's expense, or returned to the grower.

4th. On the top of the can where it would be opened, should be a label, reading, "All canned fruits, of every kind, should be removed from the can as soon as the can is opened, and placed in a glass or porcelain pan or dish. The contents of this can will keep in good order after being exposed to the air under ordinary circumstance —" (here state the time, which, in the case of the cranberry preserves, would be a very long time.)

5th. For label I would suggest in addition to an attractive picture of growing berries, that they be branded "Cranberry Preserves," this would be a very attractive brand and at the low price of sugar we can afford to use lots of it, and pure water costs nothing.

6th. Place on the can an analysis of the fruit with the signature of an eminent chemist.

7th. Below this, place in prominent letters, (This is the healthiest fruit that grows from the earth, containing some acid combinations and ingredients not found in any other fruit.) We could secure any amount of endorsements to this from prominent physicians and enter them below it.

This is an important thing. The rapid introduction of celery and tomatoes owe their prestage all to the fact that they were puffed as healthy, whether they are or not the imagination helps to make them such, and their consumption is immense when we consider the short time they have been on the market. Brand these the healthiest fruit that grows from the earth, and the healthiest woman on earth will imagine she would feel a little better if she should eat some, and others who don't know what ails them would surely buy some. I have talked with small grocery houses, who never hanlded a cranberry, about canned cranberries, and I never found one yet but what said they would buy some if they were put on the market. There is no other way to ever get a properly cooked cranberry distributed all over the country. This is the lever that will pry open the jaws of the millions and open the surplus flood gates, and create such a demand for this fruit as was never dreamed of before.

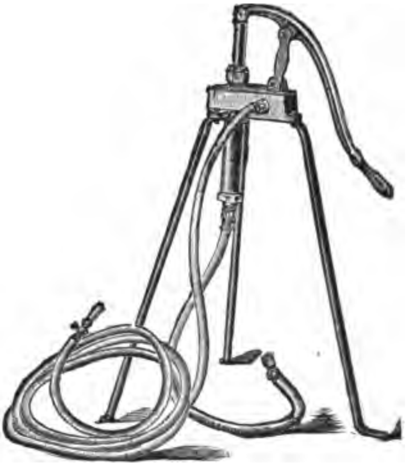
The low price of sugar has come to stay. Let either party attempt to raise the price and they touch the pocket and palate of the million and down they go. So with the interstate railroad law which giver to small places and small shippers all the advantages of the larger places and larger shippers. It has come to stay. Like the boon of liberty, once enjoyed, nothing but a revolution can deprive us of it.

The times are ripe, all things are favorable, let us strike while the iron is hot. The details of the business are not new, we can safely follow the beaten path which has made other canning factories a success, we need not grope our way in the dark. I am not in favor of canning the culls, frosen and small berries, as some propose. That would defeat the very object of the association. Let such as wish can them. The best is none too good for me and none too good for my customer.

SPRAYING.

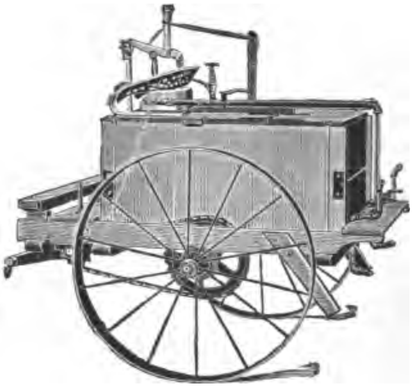
The importance of spraying is now recognized by every intelligent fruit grower, and no fruit grower who wishes to place his goods upon the market in prime condition can afford to be without an outfit of some kind, for since the advent of spraying pumps and machinery for rapid an effectual work, quite a number of manufacturers have invented various devices in the way of pumps and nozzles, each possessing some merit. We shall not attempt to say which is the best.

The Field Force Pump Co., of Lockport, N. Y., make good outfits of various kinds and prices from three to four dollars up to sixty or seventy. The Nixon Nozzle and Machine Co., of Dayton, Ohio, manufacture an excellent pump herewith illustrated called the Climax Tripod Improved. The price complete with automatic agitator is about $12. This pump is so complete and perfect that at a short distance from the spray it has the appearance of a cloud of smoke.



For spraying large orchards the same pump is attached to a barrel and drawn to all parts of the orchard.

The Climax Orchard and Vineyard Cart Improved can be drawn by one horse. The pump is worked by means of sprocket wheels and chain, but can be instantly thrown out of geer and the pump worked by hand. The tank will hold sixty gallons. These forms are all supplied with an automatic agitator — a most desirable requisite in all spraying pumps.



"CLIMAX" ORCHARD AND VINEYARD CART (IMPROVED).

WHEN TO SPRAY.

"To be effectual the spraying must be done at the proper time. To kill the apple worm or codling moth the trees should be sprayed just after the blossoms have dropped, for it is known that then the larvæ are hatching from the eggs and begin to burrow or eat their way into the forming fruit. The smallest amount of poison at this time will kill the worm. After ten days the trees should be sprayed again. If a rain should intervene it should be followed by another spraying immediately, to keep the poison on the fruit. All this should be done too before the young apple turns downward on the stem, as the egg is laid at the flower end, where also the poison should lodge to do its intended work.

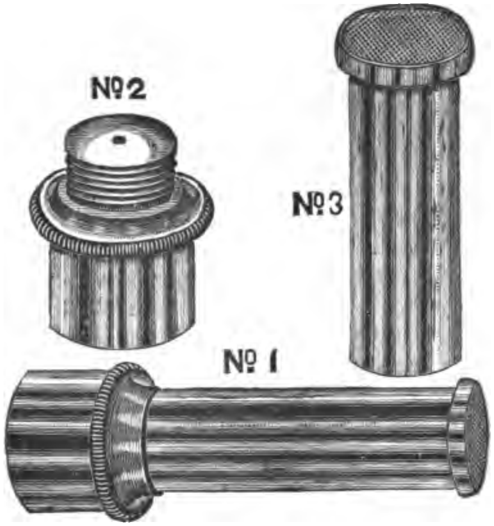
"To destroy the plum curculio on either the cherry or plum trees, the spraying is done similarly after the flowers have fallen, and repeated again after ten days have intervened."

ATTACHED TO A CASK.

HOW TO SPRAY.

"Perfect success requires that the poison should reach every fruit. With a good force pump and spraying nozzle and the liquid well stirred, a fair-sized apple tree can be thoroughly sprayed in two or three minutes. Care should be exercised not to get the poison on one's person. If a breeze is blowing, spray from the windward side.

"No danger can result from the use of these poisons as directed in this bulletin either by eating the ripe fruit or by the use of the timothy that may be grown in the orchard."



THE CLIMAX NOZZLE.

These cuts illustrate the nozzles. No. 3 shows the outer end covered by wire screen, which cuts the water into mist or spray. No. 2 shows the nipple end of same. No. 1 shows the nozzle entire.

The nozzles are simple in construction, cannot get out of order, and are very durable, being made of brass.

They are fitted with either one half or three-fourths inch thread, and will fit without difficulty corresponding sizes of gas pipe and hose coupling. They are made of various sizes, numbered from 1 to 6, and will produce spray from the density of fog to any required coarseness.

Nozzles Nos. 1 to 5 are intended for conservatory, flower garden, orchard and field use. No. 6 for street and lawn use. Price $1.00.

The use of the nozzle in creating spray is universal, and by its wonderful adaptation all arsenic and poisonous preparations are brought *directly in contact* with insects, moths, beetles, worms, etc., effectually exterminating them.

POISONS TO BE USED.

"London purple and Paris green are most commonly used as insecticides of which the former is cheaper and therefore will be more generally employed. London purple is slightly more soluble than Paris green, and yet it should be frequently stirred to prevent its gathering at the bottom of the water. One-fourth pound of either poison well mixed in fifty gallons of water is the proper strength to apply that will be harmless to foliage and yet kill the larvæ. It is best to stir the London purple or Paris green, whichever is used, in a bucket of water, and after putting it in the spraying machine, add the required amount of water to dilute it properly. With the automatic agitator this will not be necessary. This method will make the most thorough mixture."

WHAT TO SPRAY.

The foregoing directions have particular reference to the spraying of apple trees, with London purple to prevent the ravages of the apple worm or codling moth larvæ. The same application will destroy the canker worm and other larvæ that feed upon the foliage in May or June. Plum and cherry trees are sprayed after blossoming to destroy the curculio, using one-fourth pound of London purple to forty gallons of water.

THE USE OF KEROSENE EMULSION.

On the opening buds of some young elm trees there was observed, last May, numerous plant lice similar to those often occurring on young fruit trees and many house plants. Kerosene destroys insect life when it comes in contect with the animals, but it also destroys the tender parts of plants if used pure. It must therefore be diluted, and as it does not mix with water, it is held in suspension by the use of a strong solution of soap, thus forming an emulsion. One application of this insecticide sprayed upon the young elm trees was sufficient to destroy the plant lice, which threatened to cripple the foliage and thus seriously affect the growth of the trees.

The emulsion now generally recommended for the insects that feed by sucking the juices of plants, is prepared as follows:

Boil one quart of soft soap or one-fourth pound of hard (Ivory) soap in two quarts of water. When the soap is dissolved, remove the vessel from the fire and add to the mixture, while hot, one pint of kerosene oil; it is then violently stirred to make a thorough mixture, which will be permanent, this is accomplished after four or five minutes of agitation. When it is to be used it should be diluted with ten parts of water, this strength will kill the insects and not injure tender foliage; a stronger mixture can be used on hardier plants. In applying this emulsion, it should be remembered that the liquid must come in contact with the insect to kill it, and as these little animals often conceal themselves among the leaves or even cause the leaves to curl about them, it is best to use a force pump to make the application.

THE USE OF BORDEAUX MIXTURE.

The very extensive use of this fungicide has induced manufacturers to prepare it in such a way that only the simplest directions are necessary to use. The formula for its preparation is as follows: Dissolve six pounds of sulphate of copper in six gallons of hot water, in another vessel slake four pounds of fresh lime in six gallons of cold water; when the lime solution has cooled, pour it slowly into the solution of phosphate, and dilute the mixture with ten gallons of water.

These two chemicals, carefully powdered to hasten solution, and boxed in the proper proportions, are put up in 50-pound and 100-pound boxes, by W. S. Powell & Co., Baltimore, Md. It is only necessary then to dissolve these separately, then mix and dilute as in the above formula, and the Bordeaux mixture is ready for use. It was first suggested as a remedy for the grape mildews and the rots, but is not similarly used against the fungus diseases of other plants and fruits.

Grape vines should be sprayed before the growth of stem begins. to kill any germs of the diseases, and again when the foliage is fully developed. Bordeaux mixture has been tried with success upon the plums to prevent the rot in the fruit, and it is now recommended to stir the London purple in the Bordeaux mixture, and thus reach both insects and fungi at the same time. In treating the grape vine as above, it may be found that some rot will appear in the berries after July 1st, when a further use of the Bordeaux mixture would injure the appearance of the fruit. After this date there should be used instead the

AMMONICAL CARBONATE OF COPPER.

This is a cheap and easily prepared fungicide, made by dissolving six ounces of copper carbonate in three pints of liqnid ammonia of 22° strength, and diluting with twenty-five gallons of water.

SOME FACTS RELATING TO SPRAYING AND THE POISONS USED.

The following report of experiment made to determine the amount of copper and arsenic adhering to fruit that had been sprayed with Bordeaux mixture and other compounds is taken from bulletin 17 of the Hatch Experiment station of the Massachusetts Agricultural college at Amherst:

GRAPES.

During the early autumn the board of health of New York City condemned several carloads of grapes as dangerous to the public health and ordered them destroyed, because they were slightly disfigured with the Bordeaux mixture which had been used by the growers to prevent mildew and rot. This caused a "scare" among the dealers and consumers and a serious fall in prices, which affected the market more or less for the rest of the season. To determine positively the amount of copper adhering to the grapes grown in the college vineyard, two lots of fruit, of ten pounds each, were selected, one from vines sprayed with the Bordeaux mixture throughout the season, and which were very badly disfigured, and the other from vines that were treated with the Bordeaux mixture up to the middle of June, then with two applications of the ammoniacal carbonate of copper and which were not in the least disfigured.

An analysis of these two samples were made at the state experiment station. In the first sample No. 1, there was found only 2 1,000 of 1 per cent. of oxide of copper, an amount so small that one would need to eat from one-half to one ton of these grapes, stems, skins and all, to obtain the least injurious effect, and that, notwithstanding the fact that the bunches were selected from those having the largest amount of the copper mixture adhering to them.

In sample No. 2 not a trace of copper could be found. It would seem from the above that even under the most careless use of the copper solutions, no injurious effects need be feared, and that when properly applied there will not be a trace of copper left upon the fruit at harvesting.

APPLES.

Early in December the Pall Mall Gazette of London. England, published an article headed "American Apples. Alarming Allegations — Are They Doctored With Arsenic?" Then the statement is made that "American orchardists use arsenic in such large quantities to protect their fruit from insects as to completely saturate it;" and that the bloom, or white powder found on the surface of American apples is arsenic, brought to the surface by evaporation, and if the fruit is eaten this should be wiped off to avoid injurious effects. "That the delicate, unnatural (?) bloom of the American apple is due to arsenic, a drug that is largely used by people, especially the fair sex in America, to make the complexion fair," and other statements equally absurd and without shadow of foundation. These statements were undoubtedly made in the interest of speculators for the purpose of injuring the sale of American apples in the English market.

To determine the amount of copper and arsenic adhering to the surface of apples (for it could not have been absorbed into the substance of the fruit) which had been sprayed three times with the Bordeaux mixture and Paris green, twenty apples, measuring one peck, were taken to the State experiment station for analysis. The amount of copper oxide found on these apples was twenty-two thousandths (.022) of one grain. This equals about five ten-thousandths (.0005) of one ounce to the barrel, or requiring two thousand barrels to yield one ounce of copper oxide. The specimens selected for this analysis were those with the roughest surface, to which would adhere more of the copper solution of Paris green than to the ordinary apple.

Not a trace of arsenic could be detected in this analysis, as Paris green (average samples of Paris green contain about thirty-three parts of oxide of copper and sixty-one parts of arsenious oxide) was not used after July 1; but it was probably all washed off during the three months following, before the apples were gathered, which was October 1.

When we consider the fact that not one fruit grower in one hundred throughout the country used Paris green at all, and that not one barrel in thousands came from sprayed trees, the absurdity of the "scare" becomes still more apparent.

THE MAINE EXPERIMENT STATION

on the same line sends out the following:

From experiments carried on under the direction of the Horticulturist of the Maine Experiment Station, with a view of checking the work of the codling moth the following conclusions were drawn:

1. All sprayed trees had a smaller percentage of wormy fruit than did the unsprayed.
2. A mixture one pound Paris green to 250 gallons of water gave better results than did a weaker mixture; though a mixture of one pound to 320 gallons saved a large percentage of the fruit.
3. The number of windfalls was greatly lessened by spraying.
4. The proportion of wormy fruits among the windfalls was much smaller from the sprayed trees.
5. There is no danger of poisoning from the use of fruit which has been sprayed as directed.
6. The best time to spray probably varies with different varieties, but in no case should any trees be sprayed before the blossoms fall.
7. There is a greater liability to injury of foliage from the use of London purple than from the use of Paris green.

A study was also made as to means of preventing or checking the ravages of the apple scab.

Apple scab is caused by the attack of a parasitic fungus which grows on the leaves and young twigs as well as on the fruit. The attack is most severe in cool, moist seasons. If it occurs early in the season, before the year's growth is completed, the trees may be seriously injured.

Spraying with carbonate of copper dissolved in ammonia and diluted has proved an effective means of holding the fungus in check. The average increase of salable fruit on the sprayed trees over that on unsprayed trees was fifty per cent., while in some cases the increase amounts to sixty-five per cent.

A solution of three ounces of carbonate of copper in one quart of ammonia, diluted with thirty-five gallons of water, was found very satisfactory. The cost of spraying with this solution is about three cents per tree for each application.

BLACKBERRIES.

Read by Prof. E. S. Goff, of the Wisconsin Experiment Station, before the Evansville Horticultural Society, Aug. 18, 1891.

Just now the subject of blackberries is a seasonable one both to the fruit grower and the epicure. The tall bushes laden and drooping with their festoons of jet black fruit offer a picture not without attractions to the artist, but which is specially interesting to the lover of fruit, or of the profits that accrue from fruit. A discussion of blackberries, and the methods of their production, at this time and in a meeting of horticulturists, should not, and I trust will not, assume the character of a Quaker meeting. With this idea in view, I understand that what I have to offer is by no means intended to exhaust the subject, but rather to serve as a starter for a free and profitable discussion.

Not to make my introduction too long, I pass by saying that one thing that makes me proud of the blackberry is the fact that it is wholly and truly American. Most of our other fruits came from Europe with our Puritan ancestors, but no variety of the blackberry has to my knowledge as yet been introduced to our shores from a foreign clime. Add to this the fact that it is only within a comparatively short time that any systematic attempts have been made at cultivating or improving this fruit, and we have a hint of the great possibilities that lie in this direction.

Now for a few cultural hints. The blackberry thrives on any soil that is well suited to our common farm or garden crops. Like most other plants, it appreciates good culture, and liberal manuring. I think it quite possible to manure too highly for the blackberry, but as this is not the extreme that we are in great danger of running into, few cautions in this direction are necessary. Sod ground is not suitable for starting a plantation, as the young plants would be likely to suffer from droughts, but almost any other condition of soil will answer. I would have the ground well prepared and would set the plants as early in spring as the season admits.

Procure your plants of your nearest reliable nurseryman, and choose small or medium suckers in preference to large ones.

The blackberry is a much stronger growing plant than the raspberry, and hence requires more room. The rows should not be less than seven feet apart, nor the plants less than three feet apart in the row. I am of the opinion that rows eight feet apart, with the plants set four or five feet apart in the row would prove more satisfactory.

In handling the plants be careful to avoid breaking off the bud of the young shoot, which has usually commenced growth before the sucker is taken up. In planting, this bud should be slightly covered with soil, and the earth should be well pressed about the roots. Mulching around newly set plants is almost always in order, and in the advent of drought is very important.

The first season a row of potatoes, cabbage or other low crop may be grown between the rows of blackberries, if desired. The soil should be kept well cultivated, and as the stronger shoots attain the height of one and a half or two feet, the tips should be pinched off to induce branching. If the plants make a good growth a small crop may be expected the second year after planting, and a full crop the third season.

The second season the tips should be pinched off as fast as the canes attain the height of two feet. This seems very low, and many make the mistake of allowing the canes to grow too tall before pinching. The upper nodes of the cane elongate for a considerable time after pinching, so that a cane pinched at the height of two feet will attain the height of three feet or more. The pinching induces a vigorous growth of branches, and the bush assumes the form of a tree instead of a long and straggling cane, which results where the pinching is neglected. The branches, however, should not be pinched, otherwise secondary branches will start from the nodes that should produce the fruit-branches the coming year, and these, starting so late, will not have time to properly mature their fruit buds.

It is pretty generally conceded, that for Wisconsin, winter protection pays for the blackberry. It is true that in many cases the plants will survive the winter, and even bear a good crop without protection, but these cases must be considered, on the whole, as exceptional. The largest growers of our state agree that protection increases the crop sufficiently in the average season to more than repay its cost, while in a severe winter, it insures a good crop where without protection the crop would be nearly a total failure. The cost of protection is less than one would naturally suppose. I believe that Mr. Hamilton, a very extensive blackberry grower of Ripon, considers it something less than ten dollars per acre.

The most common material for covering is soil, though some recommend swamp hay or coarse manure. In laying down the canes, one or two spadefulls of earth are taken out on the side of the plant toward which the canes are to be inclined, to avoid breaking them. When this is done, the chief strain comes upon the roots of the plant, which are more elastic than the canes, and so are not very likely to be broken. The canes are inclined in the direction of the row, and all laid toward one end. The manure fork aided by the foot, serves to bend the canes over and retain them in position, while a second man covers them with soil from the space between the rows.

After the ground has become well settled in spring, remove the earth from the canes, and lift them to an upright position. It is found much more satisfactory either to tie the canes to stakes, or else to keep them within bounds by running a wire on each side of the row. These wires may be attached to stakes at convenient intervals.

It is not well to permit suckers to grow within the row, as this soon forms a thicket that interferes with the development of the plants. The suckers should be treated as weeds unless it is desired to grow plants.

As to varieties, the Ancient Briton appears to be most popular with the market growers of Wisconsin at the present time. Stone's Hardy is popular with some, and the Snyder is still grown to some extent. We have several newer varieties that should be tested, among which I may mention Agawam, Erie and Minnewaski.

Unfortunately the quality of many of our more productive blackberries is quite inferior. The wild blackberries that I used to gather in my boyhood on the borders of a wood on my father's farm, were appetizing, and I found it a severe test of my resolution to drive the plow past the bushes as I was fitting ground for wheat on dry sultry August days, without stopping to refresh myself upon their delicious juicy succulence. But in my daily garden rounds I pass a row of well laden bushes of the Stone's Hardy, and they tempt me but little. Their dry and seedy pulps are well nigh flavorless unless the berries have been left on the bushes a day after they are fully black. It must be confessed that in our so-called improvement of fruits, we have generally failed to improve quality. The wild strawberries of the field in point of flavor and perfume, put to shame our Jessies and Warfield, and Bubachs, and the same is true of most of our wild fruits that have cultivated cousins. It would appear that Pomona, in serving up her sugar, and the delicate ethers that give our numberless varieties their characteristic flavors, refuses to recognize the increase in size that our culture has developed, but dispenses the same amount of her delicious essences to the wild berries of the woodland, as to their inflated and corpulent cousins of the garden.

But I do not wish to cast slurs at our efforts at improvement. The richest field before the experimental horticulturist to-day is in the direction of improving our native fruits, and I know of no more promising fruit for this work than the blackberry. Of all the varieties I have grown, the old Dorchester, now almost out of culture. most nearly approaches the wild blackberry in flavor. This should be revived, and crosses should be made with it upon our more hardy and productive varieties. Then there is the dewberry, with its low habit and delicious, juicy fruit, — characters that might be combined with those of our blackberries with very great profit. "The harvest truly is great, and the laborers are few."

STRAWBERRIES AND RASPBERRIES AS GROWN AT COTTAGE GROVE FRUIT FARM.

By E. J. SCOFIELD, Hanover, Wis.

We prefer spring planting, and prepare our ground by first plowing thoroughly five or six inches deep, then harrow it well, run a heavy clod crusher over it, then harrow again, and put on a disc pulverizer next, then the harrow, and repeat the operation until we can see no clods, and have the soil very fine and mellow to a good depth. We plant rows 3½ feet apart and set plants 15 to 18 inches apart, depending on the variety. Such varieties as Crescent, Warfield, Beeder Wood, Michel's Early, and all great runners we set 2 feet apart in the row. To mark out the rows we use a light three runner marker, made of inch lumber, and drawn by hand. We use 3 very straight stakes 7 feet long; one at each end and one in the middle of the piece to be planted. We are now ready to mark out; set these three stakes in range with each other, now take hold of the tongue of the marker with both hands, draw the marker behind you and walk straight to the middle stake and right on to the end stake. You now have three rows marked out, and these rows are perfectly straight, providing your stakes were set right and you walked in range with the stakes. Now take your end stake and measure just the length of it seven feet from the outside row. Make a mark on the ground where the seven feet is, turn your marker round and set it so the middle runner will come exactly on this mark. Now take your stake and measure the length of it from the outside runner of the marker and stick it up here — set it straight. This stake is now standing just where you must come back to; your other end stake and middle stake also must be set over just seven feet from outside mark.

We genearally have a man or boy to tend to removing and setting the middle stake and the operator attends to the end stakes. This is the old-fashioned way of marking corn ground and suits us best of any. By this method you get a light mark and if the operator attends to his business every row will be the same distance apart and straight as a line and much faster; you have no line in your way to sag and be blown bowing by the wind while planting. To set the plants we use a dibble four inches wide and about nine inches long with a shanke handle. Plunge this into the soil up to the handle (which you can readily do if you have your soil worked up well), press the dibble to one side and pull it out, take your plant in left hand, spread roots out fan shape with thumb and three fingers, let roots down into the slot made by dibble until crown of plant is on a level with the top of the ground; now press soil firmly to the plant, but be careful and not cover crown of plant when the soil is very dry on top. Before we make the slot for the plant we brush the top soil aside with the side of the dibble where the plant is to be set, by doing this nothing but fresh soil strikes the roots of the plant. We always dig our plants with a five-tine fork (using care not to injure the roots). Plants are always dug from plantations set the previous spring which have never borne a berry. Never set an old plant or a young plant that has been produced from an old plant that has borne fruit, neither do we approve of digging plants (even in a new plantation) from the edges of the row as these are most always weaklings, the last efforts the previous fall. We always dig the entire row, we then get the best, and no amount of care will make up on a plantation set out with poor stock.

To prepare the plants for setting, as soon as a thousand or so are dug they are carried to the packing room, all weaklings thrown out, the others are stripped of all old runners, dead leaves, etc.; we also cut off all leaves except the two newest ones, roots are all cut with a sharp knife to 3 or 3½ inches long. Plants are now ready for the field, but before sending them out we dip the roots in a pail of water and put them in a basket or pail—roots covered with damp moss. We have a boy to drop the plants for each man who is doing the setting; boy is not allowed to drop the plants any faster than they are set. We sometimes (when short of help) dig several thousand before we set any, when we do this we get them all ready to set and put them in large boxes (ten or twelve inches deep) packed with damp moss among the roots. Plants will keep in this way in good condition several days in a cool place. When we get plants from a distance we always cut tops to two leaves and roots to 3 or 3½ inches and put them in the boxes of damp moss about 24 hours before setting them out in the field, this freshens and revives them up in fine shape. We also have beds made up of nice fine soil, and quite frequently when we receive an invoice of new or high priced varieties, we remove them from the moss box to these beds where they are planted five or six inches apart; here they stay until we can get time to plant them in the field which is sometimes not until June, they have by this time formed a mass of new fine roots and by giving them a good wetting down they can be taken up, reset and never wilt. We usually plant one row of Staminate or perfect blossom, to every two rows of Pistillate or imperfect blossom.

In about a week or ten days after setting we cultivate the plants and hoe them very shallow, there is very little ground to hoe over as we have the rows very straight, and by using a Planet, Jr. Horse Hoe we are able to run very close to the row leaving nothing to hoe except between the plants; we cultivate shallow every week or ten days until October 1 to 20, and hoe three or four times, allow no weeds or grass to show up, it is a very easy matter to keep them clean by taking them in time. Cultivating so often keeps the soil mellow and moist in a dry time. Never let the soil bake or form a crust for best results. Shortly after plants are set, blossoms will show up, cut or pick these all off, don't let them set for fruit. About the time (and sometimes before) they get through throwing out bloom, runners will appear, keep these cut off (we do this with sharp hoe when hoeing), until the 20th of June or July 1st. Plants are now well established and the runners that now appear will be strong and should be trained along the row. They will maks good strong plants. Let the runners grow (but keep them in place) until there is a matted row formed. Be careful and don't let plants mat too thick. Four inches apart and row ten to twelve inches wide suits us best. Now cut the runners that grow, after you get the row started, to do this we have for five years used a machine we had made for the purpose, it is very simple, made with an axel and tongue to draw by hand, there are two fourteen inch discs, one each side of the row to do the cutting these discs are the same as are used on the disc pulverizer, our machine is constructed so as to run the discs on an angle same as in the pulverizer, to use it simply set it astride the row and pull it along, it will slay the runners but pulls a little hard. This has done good service, but we have now found something that suits us to perfection, where we can use a span of horses to do it. This is a disc sulky cultivator, manufactured by the Janesville Machine company, Janesville, Wis. It is made for corn or any other cultivated crop. We got one a year ago expressly to cut runners and could not be induced to part with it now. It has six discs. It not only cuts the runners but cultivates the soil very nice between the rows, and any runners that have set plants out of where they should be are cut off, the plants uprooted and cleaned out. We think it will pay for itself on a few acres of strawberries.

Winter covering — we use marsh hay for this, and put it on earlier than most growers — we commence to cover just as soon as the ground will freeze hard enough to hold up a team and wagon. Early in the morning we distribute three or four loads of hay in heaps over the field and then commence to cover. To do this go to the heap of hay, take a forkful and carry it to where we commence, lay down this large forkful and take up but little at a time on the fork, shake it well apart so it falls all over the entire ground and plants. Put on enough just so you can see no plants or bare ground. In the spring soon as frost is all nicely out go over one-half the field and uncover the plants, leave the other half as long as we dare when plants commence to turn white under the hay they must be uncovered. Our object in not uncovering all at same time is to help lengthen out the picking season and also not run risk of getting all our berries frosted. To uncover we put two men to a row, each man has a three tine fork, they walk along one on each side of the row, set their forks down in middle of row and opposite each other, and each one pulls his fork towards him at same time. This uncovers the plants and leaves the hay lay close up to outside of row. Don't disturb the hay in the space between rows.

We always aim to uncover just after a rain, if possible, while hay is wet, it wont blow back then on the plants. By having this carpet of hay all over the ground (except on the plants) very few weeds or grass will spring up, soil is kept cool and moist, never any sandy or dirty berries. The hay also makes a nice clean place for the pickers to kneel on when picking. We employ women and girls over fourteen years old to do the picking. We use the Hallock quart box (wine measure) and sixteen quart crate.

We put two pickers to a row — one each side, allow no *poor berries* put in boxes. We do not sort or top up the boxes. One man attends to eight or ten pickers; his business is to see that berries are properly picked, and picked clean, boxes filled rounding; also carry empty stands to pickers as they call for them, and carry full stands to packing shed. Each stand holds six boxes. He also gives the pickers checks for each stand as he takes it from them. Pickers are not required to leave the row. Just as soon as we are done picking we take a two horse mower and cut down everything on the field. Leave it lay a day or so, then take a horse hay rake and rake up every thing clean, marsh hay and all. This we haul to the barn yard, stack it up and use it the next winter and spring for bedding in horse stable, and spread it all over the cow yard where we can work it into manure. We now go to the field with a double shovel plow and team of horses and give the space between the rows a good thorough digging up — we dig out part of the row on both sides. Next take a good harrow and go over the field several times, both ways. After the plants start new leaves keep spaces between rows well cultivated; cover with hay in fall, same as before. Next year, after picking is done, plow everything under — *marsh hay and plants.* Set a new plantation *every spring*; by so doing we have a new field bearing its first crop and one bearing its second crop every year. In regard to fertilizers, we have never used much but stable manure, and not much of that, as we grow all our fruit on a good strong timber land, clay soil. This land has been used to grow no crop of any kind except fruit. and has only been cropped ten years. We go more on *good thorough cultivation* and plenty of it. We have had very flattering crops by the use of commercial fertilizers and the very next season the same brand did *no* good whatever.

We are experimenting this season with nitrate of soda and must say that where we put it on as late as the first of May, the plants look very much better than where none was used. We have also learned to *keep it off the foliage*, it will burn the leaves as sure as it touches them. In regard to varieties we experiment with all the most promising new ones — have about forty varieties now growing and have discarded as many more. The most promising ones at this date that have not yet fruited are Greenville, Van Deman, and Plow City. The Greenville is from Ohio, originated by E. M. Buechly, Greenville, Ohio. Will not be offered to the public until 1893. Plow City originated with C. C. Stone, Moline, Ill., not yet introduced. Van Deman is from Arkansas, and is doing splendid with us so far. Three best varieties on *our soil* that have been out two years or more are Parker Earle, Edgar Queen, and Beder Wood. Older varieties that do well with us are Warfield, Haverland, Burt and Bubach No. 5. We think Edgar Queen will in the near future, take the place of the Bubach. Eureka is also a very fine late berry on our soil. Barton's Eclipse, Martha, Saunders and Woolverton are fine with us so far. Gov. Hoard (Loudon's 15) is a better berry with us by far than Jessie.

RASPBERRIES.

Prepare the soil same as for strawberries; set plants 3x7 feet, set plants so the germ or crown of plant will be at least two inches below the surface (this is for the cap varieties). We mark our ground out both ways with horse marker, send man with spade ahead to make a hole for plants where marks cross — man and boy. Now follow and do the planting — boy takes plants in half bushel market basket, drops a plant at each hole as fast as wanted but no faster. The roots are spread out nicely in all directions and pulls in the soil that was thrown out with spade. (Some growers plow furrow for plants, this is a quick, cheap way and you will generally get a cheap, poor growth.) Be careful in handling plants of black caps and not break off the sprout or germ; plant will generally grow if broken, but don't get started so early and will throw up weaker shoots. As soon as the new shoots get 2 to 3 inches high go over the plantation, and with a pair of pruning shears cut off the stub of a cane that was left on the plant when it was dug from parent bush, cut this stub close to the ground as if it or any part of it is allowed to remain it will most always undertake to produce a few berries which is a damage to your new bush now growing. Keep the plantation well cultivated and hoed soil loose and mellow; allow no weeds or grass to grow.

As soon as the plants get about twelve inches high nip out the end of it, this will cause it to throw out side shoots or laterals, leave these alone until the following spring, then cut them all back to six or eight inches, cultivate the ground up good both ways and hoe the remaining space around this little bush, as the first two seasons' care either make or break the life, health and productiveness of the plantation for the future. The second year and every year thereafter allow the new shoots which come from the crown to attain a heighth of eighteen inches, then stop it same as first year. Let the laterals alone (no matter how long they grow) until the following spring, then cut them all back to twelve or fourteen inches long, rake them up, carry out and burn. Give the plantation a good cultivating, cultivate one way only hereafter. Keep on cultivating every week or ten days until berries commence to color, then stop it until berries are gathered; just as soon as the last berries are picked cut out all old wood close to the ground, carry it all out and burn. Give the plantation a good thorough cultivating to loosen the soil where pickers have tramped it, if any weed or grass have started in the row take it out with sharp hoe, you can now leave them alone until following spring; after the spring cultivating is done all subsequent cultivating should be shallow about two inches — just deep enough to prevent weeds from growing and prevent evaporation of moisture from the soil. A blanket of loose mellow soil is the best and cheapest preventive of evaporation we can find. We are well aware this constant cultivating when fruit is growing is contrary to the doctrine of some growers, but if the plantation was properly started with good plants well cared for while young and pruned as it should be, the bushes will stand erect and firm, and seldom will one be found lopped over in the way of horse and cultivator. Occasionally the horse or cultivator will knock off a berry, but for every one so knocked off we consider we put two more on. We have never yet lost a crop or had them dry up to speak of when kept well cultivated.

We never give our raspberries any winter protection, and never yet in ten years had them damaged to any extent by the winter. We think by keeping them well cultivated through the fore part of summer that the new growth comes to maturity quicker in the season, hardens up before freezing weather, consequently is in better shape to stand the winter. Another point we consider of vital importance, and that is the plants we use to start the new plantation — we want these from a young thrifty plantation and layered early. We always have all our tips layered by August 20, they get a good start early before winter if the plantation has made a good growth (which it will if well cared for early in the season). Laterals will be ripe enough to layer quite early. We never use a plantation of Black Caps to propagate from after the second year. Plants from an old plantation which is on the road down hill will never start a good healthy, new plantation, we much prefer early spring planting. We always grow a row of potatoes or some other hoed crop (that wont shade the ground) among our young raspberries, the first year we grow this crop midway of the seven foot space, grow nothing among them after the first year. Set a new plantation every year, and every year we pull out an old one; crop them five or six years. Young plantations pay best. In regard to varieties of black caps we have tried most of them, and for early never found anything that satisfied us as well as Tyler until the advent of the Palmer. This is what we are planting most of now for very early. It is no earlier than Tyler, but rather a more stocky upright grown berry, healthy and hardy, more productive than Tyler, berry jet black nearly as large as Gregg, and the crop is all ripe and sold before Gregg commences to ripen. We have fruited it now for three years. For the main crop for late we have never found anything to beat Gregg, we know there are many kickers about Gregg, it has always paid us handsomely, we shall continue to plant it, it wont bear neglect (neither will any other fruit bear neglect and pay handsomely).

The Kansas is another black cap that is showing up well with us so far; have not fruited it yet. Of the reds, the Cuthbert is the only one we grow to any extent, and it is a noble berry with us, we treat it the same as the blacks, with the exception of pinching back. We let it get two feet high after the first year before we nip out the top, and in planting we set it deeper than blacks, and don't send a man ahead to make holes, merely shove down spade four or five inches where plant is to stand; work spade back and forth, pull it out, shove plant down in the slot made by spade, press soil to plant with foot. We never cultivate very deep among them; keep sprouts all out between rows with cultivator; cut out sprouts in the row with sharp hoe; keep them in hills same as black. Golden Queen we handle the same as Cuthbert; it is a very nice amateur berry. In speaking of the black cap varieties I should mention the Older Seedling, which is attracting considerable attention in Wisconsin and Iowa. It originated in northeastern Iowa, and has been grown for several years by S. K. Ballard, of Warren, Jo Davies county, Ill. Mr. Ballard tells me it is far ahead of any of the black cap family in productiveness, quality and longevity, and says he has a patch eight years in fruit (as well as younger plantations), doing well yet. We have set quite a lot of them which are doing splendid. We are anxious to see this berry in fruit (as ours was only set this spring), and shall try and take time to visit Mr. Ballard this season, when his Older are in fruit. We alse hear this variety well spoken of by Warren Grey, of Darlington, Wis., Coe & Converse, of Ft. Atkinson, Wis., and R. D. McGeehon, of Atlantic, Iowa. We hope it may prove all claimed for it.

THE PRESENT STATUS OF NATIVE PLUM CULTURE.

From Garden and Forest, 1891, page 523. Contributed by Prof. E. S. Goff.

The dearth of hardy fruits in the Northwest is naturally directing attention to the native plum. In the northern species of this fruit, the *Prunus Americana*, is found, a tree that when properly grown endures a temperature that freezes mercury, that is little affected by the brightest summer or winter suns and that suffers comparatively little from fungous diseases. The pioneers of the northwestern states in common with those of the East generally regarded the native plum as of too little value for culture. But when sad experience at length demonstrated that the finer European plums are unable to endure the severe climatic conditions of the Northwest, the better native plums were found far preferable to none and the thickets where this fruit still abounded began to receive protection. Occasionally a specially meritorious tree, or clump of trees — for their suckering tendency often caused the trees to grow in clumps — was honored with a removal to the farmer's yard or garden, and thus the good work of selection was almost unconsciously commenced.

As the real merits of this fruit began to appear, the more progressive farmers, and especially those whose tastes inclined in the direction of horticulture, began to espouse its cause in earnest. Mr. J. S. Stickney, of Wauwatosa, Wis., in an address before the Iowa Horticultural Society in 1877, said: "I am dreaming that in these native plums there is something valuable. Their endurance, productiveness and perfect hardiness should and must be made useful to us, and we have no right to rest or flag in our efforts until we have an orchard of native plums that shall command in market two to four dollars per bushel, and yield crops as abundant and frequent as the wild ones in our thickets now do. About the possibility of this, there can be no doubt." This was written but fourteen years ago, and it seems well to add that this result has already been attained. During a visit to Mr. O. M. Lord, of Minnesota City, Minn., early in September last, I saw plums sold from his native plum orchard, at sixty-five cents for the ordinary peach basket, holding about a peck, while the common native plums, gathered indiscriminately from the wild thickets, were selling at from forty to sixty cents per bushel.

What can be said of the quality of the best native plums? This question involves some difficulty since doubts have been raised regarding the parentage of some of the finer varieties. If the Cheney, Gaylord and

Rollingstone plums are pure natives, the gulf between our finest native varieties and the Green Gage or Jefferson is not so great that we need to despair of filling it. It must be confessed that the average wild plum with its diminutive size and tough, acerb skin would not make a creditable showing by the side of its more cultivated European cousins. But in the Gaylord and Cheney we have size that eclipses the Green Gage, a thin and fairly tender skin with but the merest trace of acerbity and with a flesh that for luscious juciness would suffer little in comparison with the finest European sorts. In the Rollingstone we have a plum in size equaling the Green Gage, of delicious quality, and with a skin which though rather thick and tough is without acerbity and parts readily from the pulp. The fruit has been shipped from Minnesota City to St. Louis and to New Jersey, arriving in excellent condition. The tree is very hardy and productive, and at Minnesota City is said to have missed but two crops in thirty-five years. Some of the finer varieties tend to rot under culture more than in their native state though perhaps the tendency to this trouble is no greater among the native than the European sorts.

Prof. Budd suspects that most of the larger so-called native plums that have recently been brought to notice in Iowa and Minnesota may be hybrids between *Prunus Americana* and *Prunus Angustifolia* resulting from pits of the latter species having been brought by the Indians from the south or southwestward. If this is true, it would seem that we have discovered a key to the improvement of the former species for these hybrids, if hybrids they are, manifest a very satisfactory degree of hardiness. The varieties derived from *P. angustifolia* have not as yet proved hardy in Minnesota or Wisconsin.

The soil requirements of the native plum appear to vary much with different sorts. Varieties that succeed well on a sandy soil may prove worthless on a clay, and vice versa. This frequently explains the discordant and contradictory reports so often read regarding the value of certain varieties.

The susceptibility of the native plum to injury from the plum curculio has been the subject of some dispute. It may be safely said that the native plums possess no immunity from attack by this destructive insect. It appears, however, that the proportion of larvæ that develop is much smaller in most native varieties than in the varieties of the European plum. The idea that the native plum requires no protection against the curculio is erroneous. The proportion of fruit that is destroyed by this insect, even on nearly worthless wild varieties, is often large.

It is generally conceded that productiveness in the native plums is promoted by the intermingling of the trees of different varieties. Certain varieties appear nearly incapable of fertilizing their own flowers while others, as the De Soto, seem specially adapted to serve as fertilizers. It is possible that much is yet to be learned upon this point and that the complaint of unproductiveness in the native plum may often arise from an unfortunate combination of varieties.

Some difficulty is experienced in propagating the native plum under northwestern conditions. The stocks used for the European plum are not satisfactory and so far as fully tested only the native plum itself is best adapted for its own stock. The seedlings of pure natives are rather difficult to obtain, the demand for them at present, exceeding the supply. The pits are not a commercial commodity and must be picked up, usually in small lots, and they are not very reliable for germination. Budding in our hot summers is a precarious operation and the keeping of cions and root-grafts is attended with some difficulty by those who have not learned the secrets. Even top grafting in our fickle spring weather is somewhat uncertain. But these diffculties will doubtless disappear before the knowledge developed by careful experiments.

The production of the finer native plums on a commercial scale is as yet in its infancy, but promises rapid development. The planting of some of the recently introduced varieties is now being delayed only by the limits of propagation. The first orchard of native plums started with the idea of selling the product appears to have been that of Mr. Lord of Minnesota City, which is now about twenty years old. The number of such orchards at the present time is not large, but is increasing.

University of Wisconsin.

INDEX TO VOLUME XXII.

A.

Page.

Apples, varieties of 12
    seedlings 14
Apple trees, how to plant 14
    protection for 13
Apple blight, cause of 44
Artesian wells, utility of 11
Arbor Day at Sparta 10
Apple, the Malinda 45
Apples from seeds for new varieties 53
Apple seedlings at New Orleans 54
Apples in Sauk county 57
    varieties of 58
Apple trees, best method to propagate 67
    piece roots to graft on 67
    early mode of grafting 68
    extremes in roots 69
    root grafted, what is it 69
Apples, seedlings 82
    vote on varieties in Iowa 148
    seedlings of Mr. Peffer 208
    belt for growing 211
Ampelopsis Veitchii 220
    notes on culture 222
    hardiness of 222
Ashes, use of on blackberries 228
Apple trees, early varieties of 239

B.

Bees, destroying grapes 42
Bordeaux mixture, formula for 100
    care in using 100
Business, what to follow in connection with fruit growing 117-119
Braddock, W. S., remarks of, on cranberries 142
Books, mission of 144
    the best for school libraries 144
Blackberries, how to raise them 226
    how to progagate 227
    two kinds of plants 227
    how to lay down 230
    culture of 256

C.

Page

- Cranberries in Wood County 4
  - in Wisconsin 142
- Columbian Exposition 46
  - discussion on 122-123
- Committees, appointment of 50
- Copper, Carbonate of, What is it? 101
- Character in homes 150
- Climate, Species of vegetables in 156
- Children, earliest training from the garden 163
- Committee ad interim 195
  - executive meeting of 172
- Climate, effects of, on fruit 211
- Cranberries, soil for 214
  - varieties of 237-238
  - new varieties from seed 239
  - must be improved 239
  - what varieties best 240
  - selection for improvement 241
  - Wisconsin grown the best 242
  - canning of, a new industry 243
  - canning of, profits in 244
- Chrysanthemum, culture of 215
  - new varieties 215
  - how to grow 216
  - a new name for 217
- Cut worms, how to destroy 227

D.

- Drouth, discussion on 17
  - effects of 195, 196, 197, 198
  - long protracted 29
- Discussion, on Strawberries 40
  - on apple orchards 61
  - on apples 65-66
  - on grapes 89-90
  - on spraying 97-98
  - on C. A. Hatch's paper 121
- Dartt, E. H. S., of Minnesota 127
- Delegates from Iowa 52
  - to other societies, benefits of 149

E.

- Emulsion, kerosene formula for 98, 43-99
- Eau Celesta, how made 101
- Executive committee, meeting of 172
- Education, horticultural 172
  - discussion on 175
- Evergreens 176

F.

Page.

Flowers, common kinds ... 21
  among children ... 217
  wild varities ... 218
Ferns, planting of ... 218
Flower garden ... 234
  kinds to cultivate in ... 235
  its ornaments ... 236
Fruit, some statistics of ... 72, 71
  hardiness of varieties ... 88
Fungicides, used in spraying ... 100
Finance committee, report of ... 104
Fruit farm, fertility of ... 118
Ferns in Wisconsin ... 140
  varieties of ... 31
Ferris, B. F., of Iowa, remarks of ... 128
Frost, effects of ... 196
Farmers, lack of fruit ... 196-199
Fruits, districts of varieties ... 210
  hardy, where grown in ... 211
  notes on ... 205-206
  tropical ... 211
Fruit regions of an interesting study ... 212
Fruits, effects of winds on ... 212
  in California ... 213
Fruit, soil and cultivation effects on ... 240
  loss of, by not protecting in winter ... 229
Fruits tropical ... 213

G.

Grapes, varieties to plant ... 89-90
  three best for market ... 90
Garden, owners of, independent ... 156
  comments on ... 196
  influence of ... 160
  every man to possess one ... 163
  flower, what to grow in ... 235
  its ornaments ... 236

H.

Horticulture in public schools ... 10
Horticultural, Wisconsin society, its objects ... 6
Horticulture of Waupaca ... 9
Horticultural trip and what I saw ... 11
Home, adornments of ... 21

Page.

Helebore for currant worms 43
Home, early impressions of, remain 150
Hot bed, essential to the garden 157
House, plants in, are they injurious? 230
    charcoal for 231

I.

Insecticides, combination of 112
Improvement society, its work 170

L.

Letter from O. E. Wells, Madison 9
    from R. B. Kirkland. Jefferson 52
    from O. C. Cook, Oconto 55
    from C. Hirschinger, Baraboo 57
    from Franklin Johnson 59
London Purple. What is it? 98
Labels for fruit trees 128
Library, the township 143
    in the school, its better use 145
Lessons from trees 151
    from lives of prominent men 151

M.

Members, honorary, elected 51
McMahan's apple, where originated 62
Members, honorary 165
Mullen, plant of, a new use for 227

N.

Nature, study of 29
Names, list of, at Kilbourn meeting 49
Nurseries, statistics of 72
Notes on weather for 1891 232

O.

Page.

Orchard of Mr. Cook.... 12
  mulching of 18
  trees, time to plant out.... 13
Onion, culture of 104–109
Onions, soil proper for 105
  varieties of, to plant 106
  harvesting 107
  how to keep in winter 108
Onion culture, discussion on.... 115
Onions, compost for.... 111
  transplanting of 112
  cultivation 113
  bushels per acre 116
  profit in growing 108
Oranges, districts where grown 211

P.

Pruning, to promote fruitfulness 19
  time to do it.... 20
Plants, about the home 21
  domestic, culture of 22
  study of, beneficial.... 23
Premium, special.... 35
Plum trees, foliage destroyed.... 43
Philips, A. J., observations at Washington 45
Pyrethrum, insect powder.... 96
Potassium sulphide.... 101
Potato, spraying of.... 103
Patten, C. G., of Iowa, remarks of.... 128
Protection for small fruits 137
Parks, how a village gained one.... 167–168
  in cities....
  improvement....
  discussion on 171
Potatoes, how to be cooked 158

R.

Raspberries, distance to plant.... 27
  discussion on.... 32
Report, committee of, on fruit 33
  committee of, on plants and flowers.... 34
  committee of, on resolutions 35
Reports from local societies 47

Page.

- Resolutions of Kilbourn City Horticultural Society 48
  - of instruction 51
- Russian apples, hardiness of 60
- Report of secretary 75
  - of treasurer 79
  - of committee on fruit exhibit 126
  - on trial stations 127
  - weather and crops 200
  - of A. L. Hatch 205-207
- Resolution of thanks 174

S.

- Soil, Portage, Wood and Jackson counties 4
  - for cranberries and blueberries 4
  - best for strawberries 5
- Season, its lessons 30
- Strawberries, varieties of 36
  - best blooming kinds 38
  - mulch for 39
  - matted rows 39
- Small fruit, planting of 41
- Spraying, benefits of 42
  - for good fruit 94-95
  - formula for poisons used 97-98
  - cost of material 103-104
- Strawberries, how to cultivate 133
- Schools, agriculture taught in 174
- Shrubs ornamental 178-179
- Societies reports from 182-194
- Small fruits, notes on 205-206
- Shrubs ornamental 178-179
- Stations, trial 172
- Stations, trial, report on 202
- Spraying, importance of 248
  - when to do it 249
  - pumps to use 249
  - poisons for 250
  - some facts for readers 252
  - a great scare 253
  - notes from Maine Station 254

T.

- Trees, deciduous 178
  - ornamental and shrubs 174
  - weeping 181

Page.
Trial Stations, discussion on 172
report on........ 202-204

V.

Vines, climbing........ 180
Vine, a new variety........ 220

W.

Waupaca County, fruit of........ 56

89094232014

b89094232014a

89094232014

B89094232014A